CLINICAL LECTURES,

DELIVERED IN THE

THEATRE OF MERCER'S HOSPITAL,

DURING THE

SESSION OF 1847-8.

BY

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TO

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The following Lectures

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TO THE READER.

The Lectures contained in the following pages were originally delivered, *vivâ voce*, from rough notes prepared for the occasion, without having been written out in a form suitable for publication. Independently of other considerations, the time that such a plan would have consumed in their preparation, would have prevented its accomplishment. At their first publication in The Dublin Medical Press, certain alterations were introduced, for the purpose of adapting them to the readers of a weekly periodical. Many portions were omitted, which, however necessary for a class of students, did not appear of sufficient importance to be inserted. Two, and sometimes three, lectures upon the same subject have been thrown into one, and several, on less interesting subjects, have been en-

tirely passed over. These alterations, it was thought, did not materially alter their professed character, while their condensed form rendered them more accessible to the generality of readers. This explanation is necessary, to account for the extreme brevity of some of the lectures. As no further publication was contemplated at the time of their first appearance, the original notes were destroyed, when the purpose for which they had been preserved was accomplished. It has hence become impossible to fill up any part of the original outline. The disadvantage under which they labour in consequence, would have prevented their republication in their present form, were it not for the suggestion of friends, whose character and standing in the profession stamp a value upon their recommendation.

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CLINICAL LECTURES.

LECTURE I.

DIARRHŒA—ITS VARIETIES—RESTRICTIONS IN THE USE OF OPIUM—CASES TO WHICH STRYCHNINE IS SUITED.

Gentlemen,—The disease to which I wish to call your attention is one that may be considered by many amongst you (particularly the more advanced students) unworthy of your serious attention. It is so frequent in its occurrence, and so trivial on many occasions in its nature, that it is generally made the subject of mere routine treatment, without a due regard being paid to its causes and varieties. A glance at this table, however, will at once convince you that it may be produced in several ways, and depend upon very different pathological states. Considered in this point of view, it is properly a symptom and not a disease, and the man who undertakes to treat it upon a fixed plan, without a due regard to its essential nature, does not deserve the name of an enlightened or scientific physician. Without multiplying divisions too minutely, you will find

that diarrhœa may be met with under the following different circumstances:—

1. Depending on improper food.
2. ,, on inflammation of the mucous membrane.
3. Connected with super-secretion of bile.
4. ,, with deficiency of bile.
5. Ulceration of the mucous membrane.
6. Relaxation of the muscular fibres.
7. Irritation within the rectum.

It is not my intention to enter upon a full consideration of the subject of diarrhœa in all its varieties, or to point out to your notice the peculiarities of treatment that a knowledge of these differences would naturally lead to. Most of these are sufficiently familiar to the profession, and need not therefore be insisted on at present. But there are one or two points generally overlooked, to which therefore it may be well to call your attention.

The first is an example of the seventh form of diarrhœa in the above list. You will occasionally meet with cases of diarrhœa of a most distressing character, attended with tenesmus and frequent inclination to go to stool, rather than copious and exhausting discharges. The disease is protracted, and but little amenable to the ordinary treatment. Meanwhile the patient loses his health and spirits: he becomes thin and of an anxious expression of countenance; his rest at night is broken, and a hectic of a very formidable character is at last established. The whole of this train of symptoms may depend upon some irritation within the rectum, a small ulcer or a bleeding pile whose presence is scarcely recognized by the patient himself, and of which, perhaps, he has never been questioned by his medical attendant. When the exciting cause has been discovered, the treatment is not difficult, and it is astonishing

how soon, under such circumstances, the diarrhœa is arrested, and the patient's health and spirits reëstablished. The occurrence of diarrhœa from such a cause can be best understood by a consideration of the properties of mucous membranes in general. Let us take the intestinal tube as an example. Intended, as this naturally is, for the constant transmission of substances of very different materials and action, Nature has wisely guarded the mucous membrane in a state of health with an insensibility to the stimulating effect of whatever is passing over it at the time. Were it not so, the act of digestion would be attended with continual pain. To compensate in some measure for this want of feeling which might at times be attended with disadvantage, and to give warning whenever matters are in the tube, whose presence is attended with danger or inconvenience, there has been substituted a curious property whereby these impressions become matters of sensation at the *orifices* of the tube. In this way we explain the itching at the anus which results from the presence of ascarides in the rectum; the habit of picking at the nose in children afflicted with tœnia; the desire to go to stool when the bowels are distended with fœces, &c. Even the inferences which we are in the habit of drawing from an examination of the tongue seem to be founded upon this principle, that the portion of the alimentary canal which is obvious to the senses, by a peculiar sympathy with parts that are remote, reflects the varying changes that are taking place there. Nor is this confined to the mucous membrane of the digestive tube. In the genito-urinary system we find a calculus in the bladder producing irritation at the orifice of the urethra, and the act of coughing is produced in the lungs from a similar irritation within the bronchial tubes.

A full consideration of the subject, then, leads at once to the conclusion that irritation within the rectum, like the irritation in the gums produced by dentition, excites an extensive sympathy throughout the entire tube, and naturally leads to diarrhœa as one of its occasional consequences. In every case, therefore, of protracted diarrhœa, in which a careful examination of a patient's state fails to detect an adequate cause for the disease elsewhere, the attention of the practitioner should be directed to the rectum, with a view to ascertain its real state, and remove any local irritation that may exist in it.

In all cases of diarrhœa it becomes a matter of the greatest consequence to attend carefully to the nature of the alvine evacuations. This is a point often overlooked, and even when they are regularly inspected, you will find many practitioners ignorant of the practical value of the information they afford. One of the most obvious, and, at the same time, most important points to be ascertained, is the presence or absence of bile in the stools. Diarrhœa, acute and frequent, may occur either with or without bilious discharges. The former is commonly met with in the end of spring or autumn under the form of English cholera. Increased activity of the liver seems to result from the augmented temperature of the season, as we know happens in tropical climates. The consequence of this is an increased secretion of bile, and this being the natural aperient of the intestinal tube, diarrhœa results from its excess.

In other cases, on the contrary, we find that no bile is secreted, though the patient is tormented by diarrhœa; frequent but scanty evacuations, of a jelly-like mucus, mixed with blood, are succeeded by white thin stools, as if chalk and water had been mixed together, and these form the character of the disease. It seems to be a com-

mon attendant upon those epidemics of continued fever for which our country is so remarkable; at least I find on looking into the records of the fevers which prevailed in 1817, and again in 1826, that cases of this description actually occurred during those years; and in last autumn, when fever was again prevalent, they were frequently met with.

The importance of ascertaining whether bile is passing off by the stools will become apparent when we take a glance at the treatment of these cases.

No remedy, perhaps, is more common in the treatment of diarrhœa than opium, and none perhaps is more abused. In some cases it acts like a charm, relieving pain, arresting the distress, and restoring the health of the patient. In others it entirely fails, and so far from benefiting, actually increases his sufferings. This results from inattention to the point to which I have been just alluding. Whenever bile is freely passing off by the bowels, opium may be given with safety and advantage. It not only relieves the pain, but arrests the secretion upon which the disease depends, and under these circumstances a full dose of opium, repeated according to the urgency of the symptoms, should form an essential part of the treatment. But the case is different when the opposite condition exists. Opium, if then administered, as it frequently is with the view of relieving pain, interferes still more with the due action of the liver, and actually perpetuates the evil it was intended to remove. What are the physiological effects of opium? Chiefly these: relieving pain, inducing sleep, diminishing muscular contractility, and arresting secretion. The first three of these properties are so well understood that I shall not attempt to illustrate them by any examples; but the last is less generally considered. It is this that causes the

dryness of the tongue that so commonly results from the use of opium; it is this that produces a diminution in the quantity of urine, sometimes amounting to actual suppression; and it is this that, in most cases of diarrhœa, where it is beneficially administered, is the real cause of the cessation of the disease. Many persons suppose it is the effect upon the peristaltic action of the intestines that produces relief; but it appears rather to arise from the secretions into the digestive tube not taking place. Jaundice has been known to follow, in certain individuals, a dose of opium. Dr. Hunt* has informed me of a striking case of this kind which occurred in a member of his own family; and in the winter of 1846–7, I met with an instance in Sir P. Dun's Hospital of relapse of jaundice in a patient who was labouring under diarrhœa, but in whom the bile was flowing freely at the time by the natural channels, and where the opium was administered with a view to relieve a teasing cough which prevented the patient's rest at night.

This leads me to notice the propriety of using strychnine in those cases which present the features I have just alluded to—of absence or deficiency of bile in the evacuations. Of course I do not allude to this remedy as appropriate to the acute period of the attack. Most, if not all, of these cases commence as ordinary dysentery, and require to be treated as such by bleeding, leeching, mercurial preparations, &c.; but after the febrile stage has passed away, you will find the diarrhœa remaining, with whitish stools, general relaxation, prostration of strength, &c.; and here you will find

* I cannot omit this opportunity of expressing my regret at the premature removal of my departed friend and colleague. In him the profession has lost one of its best and brightest ornaments. His death took place subsequently to the delivery of this lecture.

strychnine an admirable remedy. It was first introduced to public notice in this capacity by Dr. Bardsley of Manchester, in his "Hospital Facts and Observations," in 1817; and subsequently you will find a case detailed by Doctor Graves, in the third volume of the "Dublin Hospital Reports," precisely in point. It began as ordinary dysentery, and degenerated into chronic diarrhœa, with white or chylous evacuations, which yielded to strychnine, after having resisted a variety of other agents. But neither of these gentlemen appear to me to have explained the precise cases to which the remedy is suited, nor the principles upon which it acts. In whatever point of view you regard it, strychnine is the direct antagonist to opium. If opium numbs the sensibility, strychnine exalts it; if opium produces sleep, strychnine excites to wakefulness; if opium impairs muscular contractility, strychnine induces spasm; if opium arrests secretion, strychnine promotes it. The augmented sensibility that results from strychnine is shown distinctly by the susceptibility to external impressions that patients under its influence manifest; the slightest motion of his person, the shaking of the floor from the mere act of crossing the room, the agitation of the air in the chamber by raising the bed-clothes, are all sufficient to throw his whole frame into violent convulsions at such a time. But it is especially from its effect in promoting secretion that it deserves our attention at present. I do not know that this property has been generally ascribed to it, but I can state that in two cases of chronic diarrhœa of the kind described that I had under my care in this hospital last summer, and which recovered—one perfectly, and the other for a time, till a fresh exposure to cold induced dropsy, under which he was labouring at the time I resigned charge of the wards—the change in the character of the evacua-

tions was one of the earliest effects produced. From being white they became feculent, consistent, and full of bile; and whenever in such a case this change occurs, depend upon it you have discovered the true method of cure. Until feculent discharges are procured, the morbid state cannot be considered at an end, even though the patient's sufferings are mitigated, and the unnatural frequency of calls to stool removed. That the action of strychnine is to be explained in the manner now pointed out, and not, as many may suppose, by its inducing a spasm of the muscular fibres of the alimentary canal, which interferes with their action, appears plain, both from the fact that the bowels in the cases referred to continued open, though the number of evacuations gradually diminished, and from the circumstance that no evidence of spastic action in any other part of the muscular system could be detected.

In calling your attention to strychnine as a suitable remedy for these cases of diarrhœa, I hope you will not misunderstand me in thinking that I wish you hastily to adopt so powerful a remedy under ordinary circumstances, even where the symptoms I have alluded to exist. Other and simpler agents are at your command, and should be resorted to, especially in the earlier stages of the attack. But what I want particularly to call your attention to is the fact that we have in reserve a medicine of peculiar properties, and of great efficacy, whose value in this disease is even still comparatively unknown, and to point out to you, as plainly as I can, the precise cases for which it is adapted.

LECTURE II.

EMPHYSEMA—BRONCHITIS AND VALVULAR DISEASE OF THE HEART—PROPRIETY OF BLEEDING IN THESE CIRCUMSTANCES CONSIDERED.

Gentlemen,—The case to which I wish to call your attention to-day is that of Richard Heally, 47 years of age, a porter in a distillery, who has been ill for seven or eight months from dyspnœa, so as to prevent his following his employment. Within the last three weeks he has got much worse. The symptoms under which he labours are those of emphysema of the lungs, bronchitis, and regurgitation through the mitral orifice. If you observed him on his admission, you would have noticed the great dyspnœa under which he laboured, the inspirations being much more frequent than usual, and instead of being performed as they are in health, in a steady uniform manner, by the intercostal muscles causing a regular enlargement of the thorax in all its dimensions, they were short, sudden, and effected chiefly by the diaphragm and pectorals, enlarging the thorax in its vertical more than in its lateral capacity. The dyspnœa was indicated also by the congested hue of the face. On percussing the chest it was found peculiarly resonant, while the respiratory murmur was feeble, and accompanied by faint, sibilant, and sonorous râles. His cough was trifling, as also the quantity of expectoration.

I shall say nothing of the cardiac symptoms at present, but confine your attention for a few moments to the state of the lungs.

Bronchitis and emphysema are two diseases which frequently coëxist; and when they do they have a natural tendency to react upon each other, which increases the difficulty of treatment and the danger of the patient—the bronchitis augmenting the emphysema, and this, in turn, the liability to the former.

Bronchitis by itself, at least in its slighter forms, is a disease attended with little or no danger to the patient; frequently subsiding without artificial assistance, and never proving fatal. But the case is very different when it is complicated with emphysema. In elderly persons, death frequently results from the combination, and even the slighter degrees are attended with considerable risk—the danger bearing a direct proportion to the degree of emphysema. The point, however, to which I wish to call your attention is one of great practical importance, though perhaps not sufficiently appreciated — namely, that the structural changes in the lungs which result from emphysema render the ordinary symptoms of bronchitis less distinct than usual, and this precisely in the degree in which those changes exist. In other words, we have the greatest danger when the symptoms are least obvious. The common symptoms of bronchitis are cough, expectoration, and various respiratory râles. Now these, as in the case of Healy, where this double lesion exists, are less obvious than if the bronchitis existed separately. A little consideration will sufficiently explain this apparent anomaly. In emphysema we have a comparatively dry state of the pulmonary texture, the vessels which are distributed throughout being fewer in number and smaller in size than in health. As a consequence of this, the sensibility of the mucous membrane of the bronchial tubes, upon which coughing depends, is impaired; and the amount of

matter secreted in the form of expectoration is also diminished. Then as to the distinctness of the morbid râles, the other symptom of bronchitis, this evidently depends upon the force and extent of the current of air passing through the tubes at each act of respiration, and this again upon the extent of movement of which the thoracic parietes is capable. In emphysema, however, this movement is exceedingly limited, both because the altered texture of the lungs has forced the yielding parietes to assume a condition of permanent enlargement, and because the natural resiliency of the tubes themselves has been materially destroyed; so that they are no longer capable of contracting to their proportions in expiration.

How, then, is the degree of danger in such a case to be estimated? Principally by the intensity of the dyspnœa; and in judging of this you have three very simple, and yet very decisive, modes of forming an opinion. These are, the numerical frequency of the respiration in the minute, the mode in which it is accomplished, and the congestion of countenance to which it leads.

I shall not dwell upon the ordinary signs of emphysema (loudness of percussion sound and feebleness of the respiratory râle), further than to say that both of these may be found to exist singly in persons whose chests are perfectly healthy; but as the classes of persons in which these conditions exist as healthy phenomena are diametrically different, no possible ambiguity is likely to result from the circumstance. In females (of a nervous temperament particularly), from the slight amount of muscle covering the chest, you will frequently observe a loud sound elicited on percussion; but if you apply the stethoscope, and listen to the respiration, you will find it not feeble, but peculiarly distinct and puerile. In men, on the other hand, who

have large chests, you will often find the respiration so faint as to be scarcely audible, because the capacity of their lungs being great, the respiratory act is performed slowly, and without effort. Percussion, on the contrary, from the depth of muscle covering the thorax, is duller than usual. A slight attention to the fact of these signs existing in combination will be sufficient to prevent mistakes. There is, however, a point connected with percussion that does not appear to me to be sufficiently attended to in practice, although its importance is fully appreciated by experienced auscultators, and that is the necessity of practising percussion in different states of respiration. Under ordinary circumstances we are satisfied to percuss the chest in the state of mean respiration: that is, when the lungs are neither unusually distended, nor unusually emptied of their contents, and, in most cases, this is sufficient. But it often happens that we learn a great deal more by a comparison of the results of percussion in ordinary and forced respiration, than we could do by the mere act itself. If a healthy man's chest be percussed in ordinary respiration, a tolerably clear sound will be elicited; but if he be desired to take in a full breath, and hold it, and percussion be performed in this state, the sound will have acquired a great increase in loudness, both because there is a larger quantity of air within the thorax, and because the parietes of the chest are put upon the stretch. In emphysema, on the contrary, this differential percussion does not yield anything like the same amount of increase, because neither the quantity of contained air, nor the tension of the walls, are capable of corresponding increase. The patient Heally exemplified the correctness of this statement very distinctly.

There is a man in the male accident ward that Mr. Tagert asked me to look at, who illustrates the value of

this mode of practising percussion. He is labouring under stricture, but he has a tympanitic and oddly-shaped abdomen, with a distinct pulsation visible to the eye, underneath the ensiform cartilage. It was to this my attention was called, to ascertain whether he might be labouring under internal aneurism or heart disease. A careful examination enabled me to pronounce that the heart was perfectly healthy; that there was no evidence of aneurism, and the phenomenon in question was produced by an enlargement of the left lobe of the liver. Percussion performed over the base of both lungs gave a dull sound; a full inspiration immediately changed the dulness into clearness, proving distinctly that it depended upon the liver, which was pressed upwards against the diaphragm by the tympanitic distension of the abdomen, but which was immediately restored to its natural position, as soon as a full inspiration had taken place.

The greater part of the treatment of Heally's case corresponds with that which is usually pursued in similar instances; and, therefore, I shall not dwell upon it at present: but there is one point upon which I wish to make a remark or two, and that is, the bleeding which was directed after his admission. In ordinary bronchitis, general bloodletting is resorted to only when the inflammation is very extensive, or when there is great fever. In the present instance, we had neither of these conditions to meet, and so far as the bronchitis was concerned, the venesection was unnecessary.

Was it, then, the coëxistence of the emphysema that called for the lancet? Not at all. As a general rule, bleeding is inappropriate whenever emphysema exists, because the effect of this disease upon the lungs is to impair their power of aërating the blood, and the system,

in consequence, is only imperfectly supplied with that fluid, upon which all its vigour and activity depend. If bleeding is necessary at all under these circumstances, it should be performed with a more sparing hand than usual; and this is the reason why, having from other considerations determined upon the propriety of the remedy, the quantity which I ordered to be taken was limited to eight ounces. What, then, was it which induced me to resort to this measure, so unusual in such cases? It was the coëxistence of disease of heart.

I do not know any more profitable study for the pupil than to contrast the case of Healy with that of the woman M^c^Loughlin, in the female accident ward, if he wishes to get a clear view of the principles which ought to guide us in the management of these cases. They are both examples of valvular disease of the heart, and in both bleeding was performed; so far they agree; but in every other respect they differ widely. In the one, we had regurgitation through the mitral valve — in the other, through the aortic. In the one, we had a full, hard, and strong pulse, at least in certain positions; in the other, we had a quick, and small, and irregular pulse. In the one, it was the state of the heart that determined us to use the lancet; in the other, the state of the heart, so far from leading us to bleed, would have actually deterred us from the operation. Yet in both you have seen the good effects that followed from the measure, though the circumstances were so different. But what, perhaps, is stranger still than anything that has yet been noticed, is the fact, that if we were to judge of the necessity of bleeding by the state of the pulse, which is the common standard of medical men, we should, undoubtedly, have been led into error. In the patient with the weak and irregular pulse, the car-

diac disease required the bleeding. In the other, when the pulse was apparently full and strong, it prohibited it.

Let us examine the symptoms referable to the heart in Heally's case a little more closely. On percussing the præcordial region, no unnatural dulness was produced: there was, in fact, no evidence of the enlargement of the heart. Over the aortic orifice both sounds could be heard of their natural character and clearness; and also at the point of the ensiform cartilage. Over the left ventricle, on the contrary, and towards the apex, a distinct prolonged bellows murmur took the place of the first sound, evidently indicating regurgitation through the mitral orifice: the pulse was feeble, quick, and irregular.

Whenever this lesion exists, I need not tell you that a portion of the blood contained in the heart is sent back during the systole of the ventricle into the auricle, instead of being propelled in the natural direction into the aorta. The consequence of this irregularity is a double injury to the individual. Congestion of the lungs, on the one hand, from the retrograde current, and imperfect nutrition of the system at large from the diminished quantity of blood transmitted by the aorta. This is proved by the feebleness of the radial pulse, which invariably attends it, and by the contracted dimensions of the aorta when post-mortem inspection has been practised.

You will say that when the system is enfeebled in the manner described, a bleeding even to any extent is not an eligible remedy, if it can be avoided; and I fully concur in the observation: but in treating disease as it exists in nature, we have often only a choice of evils presented to our view; and it becomes a question of much nicety to decide exactly what is most expedient under the circumstances. Recollect the combination of diseases under which

this man was labouring, all tending to embarrass his breathing, and to induce asphyxia, and you will at once perceive that even at some expense to the system at large, a measure which could relieve the respiration, would not only promote the patient's comfort, but materially assist in his recovery. The result justified our expectations. The respirations, which had been much more frequent before the operation, immediately fell to 28 in the minute, and have since gradually sunk to 20 ; while they are performed with an ease and steadiness that form a striking contrast to their previous embarrassment.

In M^{c}Loughlin's case, on the contrary, we have regurgitation from the aorta into the left ventricle, or, as it is frequently called, permanent patency of the aortic valves, a disease indicated by a double soufflet in the situation of the semilunar valves, and extending into the great vessels of the neck; secondly, by a visible pulsation in these arteries as well as those of the arm ; and thirdly, by a hard and full but receding pulse. In these cases, where the lesion does not involve the other valves of the heart, the lungs are safe, because regurgitation is prevented at the mitral orifice, but the system suffers in the same manner as that already described from an imperfect supply of blood. This itself, as I have observed already, is a sufficient reason why bleeding should not be resorted to unnecessarily. But there is an additional reason in this particular lesion, which does not exist when that imperfect supply arises from regurgitation through the mitral valve; and that is, that the column of blood in the aorta being no longer sustained by the semilunar valves, the duty of supporting it against the pressure of gravity is thrown upon the ventricle, which is thus deprived of its natural intervals of repose. To compensate for this, the ventricle constantly becomes hyper-

trophied, and everything which exhausts its energy exerts an injurious effect upon the patient.

What, then, was it which induced me to recommend M^c^Loughlin to be bled? The frequent attacks of epistaxis from which she suffered, and which appeared to threaten approaching apoplexy. When you consider the quantity of blood she lost on several occasions without any obvious cause, in the course of a few days, you will be prepared to understand that anything which would relieve the tension of the vessels must be of service, while the loss to the system at large is equally the same whether it is occasioned by disease or art.

Having explained why it is not expedient, as a general rule, to bleed in regurgitation through the aortic valves, I have now to tell you why the pulse is not to be taken as a guide in bleeding in any instance where it may be necessary.

There is a point to which such of you as were present at the time may remember that I called your attention, verifying the remark by actual experiment; but which I have not seen pointed out in books, and that is, the remarkable effect which posture has upon the pulse in these cases. In the erect position—that in which most persons happen to be placed when the physician pays his visit—it is full, and hard, and strong; in the recumbent, on the contrary, it is weak and compressible: the reason of which, I believe to be this—In the erect posture, the blood being acted on by gravity is forced down into the principal trunks, especially from the carotids; the vessels hence being tense and rigid, the pulse acquires a fictitious strength, which disappears as soon as the mass is more equably distributed by the patient assuming the horizontal position. Perhaps there may be a second cause operating

to produce this result. The ventricle having to propel the blood in the erect posture, against the force of gravity, by an instinctive effort, contracts with greater vigour than at other times when it has not this disadvantage to contend with.

Allow me to repeat that I think you will find it a profitable subject to contrast these respective cases, both in their symptoms and in their nature. It is satisfactory to observe that a remedy, practised under such opposite conditions, and with such different intentions, should nevertheless, in both instances, have been followed with the happiest results.

LECTURE III.

CHLOROTIC ANASARCA.

GENTLEMEN,—The case to which I wish to direct your attention this morning is that of Mary Leonard, a young woman, ætat 22, who was admitted on the 23rd November, labouring under general anasarca. The history she gives of her case is this: About two years ago she had a mild attack of scarlatina, which was succeeded by anasarca that lasted nine months. She remained well for four months, and then the disease returned, and has continued ever since. The symptoms she presented on admission were œdoma of the face, especially about the eylids, and of the lower extremities, which pitted deeply on pressure. There was none in the upper extremities, nor any accumulation in the cavity of the peritoneum. The whole surface of the body was of a peculiar white, waxy colour; the pulse feeble and compressible; the urine scanty, of low specific gravity .1010, neutral in its reaction, not coagulable by heat, and of an appearance exactly resembling fresh lemon juice; there was no bruit audible in the cardiac region; the appetite was bad; the bowels regular.

Anasarca may be divided into three distinct species, which differ essentially in their nature, and require very distinct modes of treatment. The first is the inflammatory, such as is met with in connexion with scarlatina and ordinary exposure to cold: the second is the mechanical, arising from compression of important blood-vessels; and the third is that which depends upon peculiar alterations in the

quality of the blood. In these species may be comprehended all those cases which arise from debility, from anœmia, from granular degeneration of the kidneys (this being really a secondary affection), and those, of which the present is an instance, which depend upon chlorosis.

I do not intend to enter upon the general subject of anasarca upon the present occasion, but merely to limit my observations to the class of cases to which that of Mary Leonard ought especially to be referred.

You are all probably aware that at one time the doctrines of the humoral pathologists prevailed universally in medicine; and that every morbid condition was referred to a change, real or supposed, in the fluids of the body. At that time medicine, as a science, may be said to have had no existence. Anatomy, the basis of all real knowledge on the subject, was comparatively unknown, and conjecture took the place of observation. Hence, whenever physicians were at a loss to explain the phenomena of a disease, they drew upon their imagination, and spoke of the animal spirits and peccant humours with a familiarity and freedom that nothing but the most accurate acquaintance with their existence and nature could at all warrant. But bold assertion and hard names, though they may serve their purpose in an age of ignorance, can never hold their place before the searching light of Truth. The progress of practical anatomy, and especially of post-mortem examination, dissipated the dreams of these visionary theorists. But while it led to the explosion of doctrines so unmeaning as those of the old school of humoral pathology, it introduced a new error of an opposite kind—namely, that of referring all morbid processes to some form or other of inflammation. The exclusive solidists of modern times are as really in error in their opinions as the exclusive humoralists were

formerly. The attention which has lately been paid to animal chemistry, assisted by ultimate analysis on the one hand, and microscopical researches on the other, has led to the revival of a new school of humoral pathology, not now, as of old, founded on whimsical hypotheses, or even plausible conjectures, but based upon accurate observation and enlightened experiment. Now, mark the difference between the humoral pathologists of the present day and those of whom we have been speaking. The former do not hold their doctrines to the exclusion of inflammation, but employ both these principles in the explanation of disease. Nor are they satisfied with *inferring* alterations in the fluids of the body from obscure changes in the secretions; they ascertain the fact itself, and the exact nature of the alterations, from experiments conducted with all the care and ingenuity that modern discovery enables them to bring to bear upon the subject.

In all speculations of this kind, the blood, from its peculiar office, holds the first place. It is an extremely complex fluid, as a single glance at this table, extracted from "Simon's Chemistry," sufficiently testifies; and although it is necessarily undergoing a constant change in its progress through the body, yet such is the nicely-adjusted balance of supply and consumption, that in health it continues to maintain a tolerably uniform composition. There are three principal ways in which this fluid, so essential to health, may be altered to produce disease. In the first, the relative proportions in which the healthy elements exist in it are altered; in the second, some of them are entirely absent; and in the third, substances altogether foreign to its normal constitution are admitted into it.

Of the first of these we have examples in chlorosis and anœmia—two diseases generally confounded together, but

which have been recently shown by Sir Henry Marsh, in an able paper in the fourth number of the *Dublin Quarterly Journal*, to differ essentially in their nature, as indicated by the specific gravity, colour, consistence, and temperature of the blood, and also by the various morbid affections which are associated with each.

The altered condition of the blood which prevails in chlorosis has a double tendency to produce dropsy. It is both thinner in its consistence, and less stimulating in its properties than in health. The one of these facilitates transudation through the coats of the blood-vessels, and the other, by retarding the circulation, brings the current more directly under the influence of gravity, so as to favour accumulations in those parts of the body which are more dependant. When the blood is rich and nutritious, and sufficiently stimulant, it imparts tone to the vessels, especially the veins, and keeps them in a state of constant contraction, the valves perform their office efficiently, and no stagnation can occur; but when the blood is in an opposite condition, as after protracted fevers and exhausting diseases, the very reverse takes place, the vessels become relaxed and distended, the valves are consequently rendered inefficient, and anasarca necessarily follows.

Time will not permit me to dwell on the many important practical points contained in Sir H. Marsh's paper, which I cannot too strongly recommend to your careful study; but there are two common errors connected with chlorosis which he especially refutes, and to which I wish for a moment or two to call your attention. The first is the idea that there is an absolute diminution in the quantity of blood in this disease. So far is this from being universally the case, that he states it is not uncommon to find the circulating fluid actually increased in amount,

though its quality is deteriorated. The practical value of the point is, that it is often the shortest and most effectual mode to improve the blood to commence by a small bleeding. The removal of a portion of the thin and watery elements, makes room for the easier introduction of those saline and mineral ingredients which give consistence to the whole. When the absorbents are surcharged, it is difficult for them to act at all, much less with that energy which is necessary to bring about a speedy return to the healthy condition of their contents.

While, however, the general principle is kept in view, that a suitable abstraction of blood, even in chlorosis, may be productive of advantage, the greatest caution must be exercised in resorting to its use, because the enfeebled state of the system does not readily bear so debilitating a remedy, and it has often happened that protracted or even permanent injury has resulted from its injudicious adoption.

The same object, however, may be obtained, as it appears to me, with less risk and with equal certainty, in another way—namely, by the use of purgatives of a mild but effective character. In the present instance, we ordered moderate doses of the compound powder of jalap to be taken at bed-time, and, as you observe, with the most marked advantage. The superiority of this practice to the other will be apparent on a little reflection. You cannot use the lancet at all without taking away from the patient some portion at least of the globulin, the most valuable part of the blood; whereas hydragogue cathartics merely act upon the watery element, without affecting any of the other ingredients contained in it.

The other error is, perhaps, not so common now as it was formerly, but it still exists among many of the less

educated practitioners—namely, supposing that the disease depends upon suppression of the catamenia—a symptom that usually attends it. In the case of Mary Leonard, on the contrary, the catamenia were regular, though deficient in quantity. The truth is, that whether this secretion be entirely suppressed or only reduced in amount, which is the more common condition of the two, the change is the consequence of the disease, not the cause of it. The impaired energy of the nervous system which results from the unstimulating character of the blood, leads to torpor of the whole glandular apparatus, as indicated by the costive state of the bowels and the diminished quantity of urine, as well as the symptoms immediately under consideration. Nor is this error of a speculative character merely: like the former, it leads to important practical mistakes. Sir H. Marsh tells us he has known instances where the whole efforts of the physician have been expended upon the restoration of this function to its proper state, and expended in vain; the patient's condition having been injured, while the wished-for object has not been obtained: whereas when the state of the constitution has been improved by judicious management, the menses reappear naturally, and resume the healthy character both as to quantity and frequency.

In some respects this case resembled that form of dropsy which is associated with Bright's degeneration of the kidney. There was the pale, bloodless complexion, the scanty urine of low specific gravity and neutral reaction. But then it did not coagulate by heat, nor exhibit on examination by the microscope any fatty particles either adherent to the epithelial cells, or floating in the fluid. For a long time it was supposed that albumen in the urine necessarily proved the existence of granular degeneration in the kidney. It

is now ascertained that it depends upon the mechanical congestion of the glands, produced by a deposit of fat within the tubules, and the consequent escape of the serum of the blood into the urinary ducts. In the same way the unnatural reaction to test paper is produced. This congestion may occur in a variety of other diseases, though not in the same way: for example, in scarlatina, organic disease of the heart, &c., and of course coagulable urine will attend them. Neither are the low specific gravity and the diminished quantity necessary evidences of its existence. On some future occasion I may probably enter upon this important question fully; at present I will only add, that the recent researches of Mr. Johnson, as detailed in the *Medico-Chirurgical Transactions*, establish the point that the only real proof of its occurrence is the presence of oil globules in the urine, as detected by the microscope. In the case of Mary Leonard no such appearance could be detected. We were enabled, then, by this as well as other reasons, to discard entirely the idea of the anasarca depending upon organic changes in the kidney, and to refer it solely to the chlorotic condition of the patient.

Under this impression, the treatment was sufficiently simple. Besides the purgative already mentioned, she was directed to take twenty drops of the muriated tincture of iron in a sufficient quantity of water three times a-day. This medicine acted freely on the kidneys, besides imparting tone to the system at large; and in proportion as these began to act, the dropsical symptoms subsided both from the face and from the feet. There were two effects produced by the mineral which it is well to notice, because they are properly its physiological properties. These were, cerebral congestion, as indicated by headache and flushing of the cheeks coming on shortly after each dose had been

taken, and an increase in the specific gravity of the urine, as well as in the depth of its colour, which evidently resulted from the escape of a portion of the ferruginous salts into the secretion.

This treatment has proved so satisfactory that the patient has recovered rapidly, notwithstanding the protracted period of her illness, without any necessity for it to be altered.

LECTURE IV.

SPINAL ARACHNITIS—ITS DIAGNOSIS—RARITY OF THE IDIOPATHIC FORM—ITS EPIDEMIC APPEARANCE—APPROPRIATE TREATMENT.

GENTLEMEN,—The case to which I wish to direct your attention this morning is that of Mary A. Finucane, a florid-complexioned, healthy-looking girl, ætat 18, who was admitted on the 29th November, 1847. Her history is this:—On the 25th, she took of her own accord two antibilious pills, which operated powerfully the next day. On the 27th and 28th, she complained of an acute and severe pain in the abdomen, for which I was asked to see her on the 29th. She was then up and dressed, so that I could not examine her satisfactorily. I found her vomiting, screaming out with agony, but the bowels unmoved. I sent her to the hospital, and directed a turpentine enema to be administered, which operated freely; but did not remove or relieve the pain. The next day I made a careful examination of her state, and found the pain as acute as before, confined to the region of the stomach, which was so tender to the touch that she shrank from the attempt to examine it, though she could bear pressure freely over the rest of the abdomen: this was soft, and not full. Besides this, she complained of vomiting and headache: the face was flushed, and the head hot, but the eyes were clear, and there was no intolerance of light or sound. She had also pain in the back, and acute tenderness over the two lower dorsal vertebræ, while she felt a sensation of cold water dripping down the spine and legs,

and was unable to straighten herself into the erect position. The pulse was about 80; the skin hot; she had thirst and loss of appetite; the tongue was moist, and covered with a slight bilious fur, and the urine scanty.

From the circumstance of these symptoms setting in suddenly in a person previously healthy, and being accompanied with a manifest degree of fever, I was led to consider it as an example of spinal arachnitis—a disease comparatively rare, but to which the attention of the profession has been recently directed from a number of cases which have come on under very peculiar circumstances.

There are, however, several other diseases with which it might very naturally be confounded, and it is necessary for the purpose of diagnosis to examine the points in which the case under consideration differs from the ordinary symptoms of these affections. These are—1. Peritonitis. 2. Fever. 3. Spinal Neuralgia. 4. Hysteria.

First, as to peritonitis:—The symptoms of Mary A. Finucane's case resembled this disease, in the excruciating pain referred to the abdomen, accompanied by fever, exquisite tenderness on pressure, vomiting, diminution in the quantity of urine, and especially in the circumstance that the attack commenced suddenly, and acquired its intensity so soon. But then, on the other hand, it did not present the small wiry pulse of peritonitis; the peculiar position in bed, usual in that disease; the obstinate constipation of the bowels; nor the universal tenderness of the abdomen.

The apparent resemblance to ordinary fever may be judged of from the fact, that I was asked by the apothecary, the day after her admission, as well as by others,

was it not a case of fever? And I found, very much to my surprise, on looking at her bed-ticket, that the disease was so named by the gentleman who is kind enough to act as clinical clerk. It is true that in the first aspect of the case, as well as in the general symptoms, there is a great deal to lead to this conclusion, but then if you examine a little more closely, you will find that it does not resemble fever, either in the mode of invasion, or in the manner in which the symptoms were grouped together. It did not commence with rigor, nor, as far as I have been able to ascertain, was she exposed to infection. Fever is seldom attended with vomiting to the extent we had it in her case. Still less with the excruciating pain and tenderness that formed so prominent a part of her complaint. And the bowels are usually less obedient to the action of aperients at the commencement of fever than we found them to be. Besides all this, the symptoms, when examined in detail, did not present that intense or characteristic distinctness which was compatible with the idea of mere fever. The skin, though hot, wanted the pungent feeling of the calor mordax; the thirst was not excessive, and the nervous system partook in no degree of that oppression which is an essential feature in all varieties of ordinary fever.

The other two diseases, spinal neuralgia and hysteria, for which I said the present case might be mistaken, are essentially chronic in their nature, and so far differ widely from the symptoms we had here to deal with. But even if this difficulty could be got rid of, I believe there would still remain paramount objections to our confounding it with either of them. Of the two, spinal neuralgia is the affection which approaches most nearly in its features to the present. The tenderness in the dorsal spine, as well

as in the epigastrium, and the vomiting, are common to both, but I believe you will seldom find a patient affected with spinal irritation merely, complain of a numbness in the extremities, a sensation of cold water dripping down the back, and of inability to straighten herself.

There is one symptom which, independently of the absence of any of the ordinary features of hysteria, such as great nervous excitability, involuntary emotions, &c., appears to me to prove, in a very marked manner, that the case is not to be confounded with any form that this disease, so Protean in its phases, might assume; and that is the condition of the urine. In hysteria, it is abundant, limpid, and of low specific gravity; here we found it scanty, loaded with lithic acid, and of high specific gravity—the thermometer showing it to be 1035. It is not necessary, I think, to prosecute the question of diagnosis any further, but simply to remark how important it was to arrive at a right conclusion upon the subject—the whole danger of the patient, and the treatment appropriate to her relief, hinging upon the particular view we might be led to take of this question.

Spinal arachnitis in an idiopathic form, is happily a very rare disease: most of the cases with which the records of surgery are supplied being the result either of violence or accident. A common enough cause seems to be, sitting for a length of time in a constrained posture. In France, before the introduction of railways into that country, travelling was not brought to the same degree of perfection that prevailed in Great Britain. The diligences were clumsy, uncomfortable carriages, made for strength rather than the ease of the passengers, while the roads were bad, paved with large irregular blocks of stone, and so rough that they shook both carriages and travellers

much more than an English stage-coach on a smooth, macadamised road. Added to all this, the arrangements for the arrival and departure of the diligences were so defective, that a traveller frequently had no alternative but to proceed the whole distance of his journey without cessation or rest, it might be for three or four days and nights continuously. Under these circumstances, it can scarcely be esteemed a matter of surprise that the constrained position, as well as the jolting to which passengers were thus subjected, should lead to frequent attacks of acute inflammation in the spinal marrow and its membranes. Several cases occurring in this way you will find detailed at length in "Cruveilheir's Pathological Anatomy."

But of late years considerable interest in the profession has been excited by the fact, that spinal arachnitis has been noticed on several occasions to arise idiopathically, and to assume an epidemic form. For the first notice of this remarkable feature in its history, we are indebted mainly to the continental pathologists. There are certain circumstances connected with diseases, which originate in epidemic influences, and great obscurity, it must be confessed, still exists upon the subject of the origin and recurrence of epidemic diseases; perhaps no example can be produced more striking or unaccountable, than the one at present under consideration. The mere fact that a certain local inflammation should occur, without any obvious cause, more frequently at one time than another, is in itself sufficiently curious; but when in addition to this we find that it is accompanied with certain special symptoms which link all cases occurring about the same period together, and separate them from others, we are plainly forced, from the necessity of the thing, to refer their pro-

duction to a real (though as yet unknown) influence, operating at one time, and not at another.

In both these respects, cerebro-spinal arachnitis follows the ordinary course of other epidemics. Jahn tells us, in his "Practical Essays," that at Meiningen, in the year 1834, he met with twenty-one cases in the course of seven or eight weeks. Rilliet, in the *Archives Générales*, declares that, at Geneva, he has seen it not only in infants, but in adults. And on repeated occasions, since the year 1837, it has been found to attack epidemically the fortified towns in France, Versailles, Metz, Strasburgh, Bayonne, &c., so that the Royal Academy, from the importance it had assumed, made it the subject of special investigation by commissioners appointed for the purpose. Last year (1846) it made its appearance among ourselves, and under circumstances of a very remarkable character. It first was observed at Loughlinstown by Dr. Darby, who published an account of its symptoms and progress in the *Medical Press;* next it appeared at the South Dublin Union, under the charge of Drs. Shannon and Mayne, the latter of whom has given an admirable description of the disease in the *Dublin Quarterly Journal;* and lastly at Belfast, all about the same period, and in each locality marked by the same peculiarities. Thus, in each instance, it was the inmates of the workhouse who principally suffered. It was confined almost exclusively to boys, wherever it was met with. It began suddenly, ran its course rapidly, was remarkably fatal, and presented, on post-mortem examination, a much greater amount of inflammatory disorganisation in the spinal marrow and its membranes than in the head.

I must refer you to Dr. Mayne's paper for a detailed description of the symptoms of the disease in its more

aggravated form, merely remarking that from the suddenness of the attack, the vomiting and purging that frequently attended it, and the early period at which collapse set in, he states that it appeared to exhibit a great resemblance to the Asiatic cholera, that proved so destructive about fourteen years ago.

If you compare the history of the present case with the detail contained in Dr. Mayne's paper, I think you cannot avoid being struck with the remarkable similarity between the two, with this difference, that the severity of the affection was not nearly as great in Mary A. Finucane as in those cases he describes. I believe, however, you will find in this disease, as in all others, great variety produced by the intensity of the morbid action on the one hand, and by the precise part of the spinal column engaged on the other. If the arachnitis principally occupy the cervical region, you will find the symptoms assume much of the characters of tetanus: the head will be rigidly drawn back, and so strongly, that no ordinary effort of muscular force on the part of the attendants can relax it. If it be seated lower down in the upper part of the back, as occurred in a case under my care at the workhouse, in the spring of 1846, it may give rise to imperfect paralysis of the arms, and morbid sensations there. If lower still, as in the case before us, it will induce epigastric pain and tenderness, vomiting, and unusual sensations in the lower extremities.

The fact that it has hitherto seldom attacked females, is very remarkable. In France, it was principally young men recently recruited for the army that were its victims, and when it appeared among civilians, it was still in persons of the same age and sex. In Ireland, it has been confined almost exclusively to boys under twelve. But

instances of its occurrence among females are not wanting. Dr. M'Dowell, of the Hardwicke Hospital, met with two—one a girl of seventeen, the other, a woman of twenty-five years of age.

I need not tell you that arachnitis, under any circumstances, is a very formidable affection. But the recorded testimony of medical writers upon the epidemic form, show us that it then assumes a severity unparalleled in the sporadic variety.

Jahn lost twelve out of his twenty-one cases. Rilliet states that it actually decimated the French garrisons of those towns in which it appeared, and that its ravages among the civil population were equally great. Both Drs. Darby and Mayne corroborate this testimony from their own experience.

I shall not dwell upon either the rapidity of its progress when it has once set in, or the suddenness of its invasion, commencing in the midst of apparent health, frequently after the patient has lain down to sleep, and terminating fatally, in some cases, in fifteen hours; in others, in forty-eight; and, in the majority, about the fourth day; but there is one point upon which it is necessary for me to make a remark or two, and that is, the impossibility of accounting satisfactorily for its occurrence. In France, several conjectures were hazarded upon the point, but all of them appear destitute of foundation. From the fact of the disease occurring principally among the young conscripts, it was attributed to separation from their families, change of diet, and regimental discipline; but this was at once refuted by the circumstance of its also appearing among young men in the same places, who were not enlisted, and consequently were not exposed to any of these injurious influences. At Bourdeaux, from its vicinity to

an old marsh, it was attributed to the miasmata that were supposed to arise from it; and quinine was used in the treatment in consequence, but without any good effects resulting. The cases that occurred in Ireland, however, completely upset this theory. Independently of intermittent fever having lost much of its violence, and being a comparatively rare disease among us, the cases neither exhibited the periodic character of ague, nor did they come at the season of the year when it usually prevails. They occurred in spring, whereas it is in autumn exclusively that the intermittents of the British isles are met with. Neither could it be traced to any peculiarity in the condition of the atmosphere. There was nothing unusual in the prevailing winds, temperature, or hygrometric state of the season. A special examination of the boys' apartments was made at the respective workhouses, and revealed nothing to which the affection could be attributed. In every instance, the girls were treated in a manner precisely similar, and yet they escaped.

The treatment which I adopted in the case of Mary A. Finucane was such as might naturally be anticipated from the view I took of her disease. It was decidedly antiphlogistic, and it was as energetic as the urgency of the symptoms would allow. She was first bled from the arm to eight ounces, and then she took two grains of calomel, with one of James's powder every third hour. She got immediate relief from the bleeding; the pulse reduced a good deal in strength and frequency, but she did not faint—a point of some importance, as marking, in many doubtful cases, the distinction between fever and ordinary inflammation. She was subsequently leeched, and put upon small doses of tartar emetic, while the calomel was continued. Under this treatment she gradually recovered; the pain

and tenderness in the epigastrium left her entirely, while that in the back diminished in amount so much that, from a fear of losing her situation, she entreated permission to leave the hospital about the middle of December.

I believe that in all cases of this disease, the treatment just described, varied in activity by the urgency of the symptoms, is that which is most proper to be resorted to; and when the disease is at all mild, it will be uniformly successful. In the case to which I have already alluded, as having occurred under my care in the workhouse, in 1846, I practised it, and with complete success. As soon as the patient's system came under the influence of mercury, the paralysis and loss of feeling, and morbid sensations disappeared, and in due time he left the institution perfectly well. Unfortunately, however, we have not always such manageable cases to deal with, and then this same plan, notwithstanding the greatest promptitude and skill in its application, will unhappily fail. But it is some consolation to know that if this plan, under such circumstances, should prove unsuccessful, the Records of Medicine teach us no other. In France, where mercury has been less used than in Britain, the fatal issue is far more frequent; and it is not assuming too much to say that our superior success is due to our greater boldness in pushing the mineral. Dr. Mayne, in his paper, makes many admirable suggestions of a practical nature, which are well worthy your consideration; among the rest, to the necessity of resorting to external stimulants of the most powerful kind, such as mustard and turpentine, so long as the primary collapse subsists, while he recommends the greatest caution in their internal administration, even of those of the diffusible class, because of the vital nature of those textures in which the inflammation is seated.

LECTURE V.

ALBUMINOUS URINE—DIAGNOSIS AND PATHOLOGY OF BRIGHT'S DISEASE OF THE KIDNEY.

GENTLEMEN,—I alluded, on a recent occasion, when speaking upon the subject of anasarca, to the disease which is now so well known by the name of Granular Degeneration of the Kidney, and informed you that the most experienced authorities have laid it down as a fact, that the essential diagnosis can only be established by the aid of the microscope. The importance of the question seems to justify me in taking the matter up more at length, especially as the discoveries to which I allude have been very recently made. In connexion with the general subject, I shall speak of the case of John Doris, a patient who is labouring under anasarca of the lower extremities, particularly the right, and whose urine occasionally exhibits the property of coagulation by heat. Besides this, he suffers from valvular disease of the heart, consequent upon an attack of acute rheumatism, and which is attended with regurgitation of the blood through both the aortic and mitral orifices. He is only twenty-six years of age, but has been three years suffering from the disease of his heart, which obliged him to relinquish his profession as a soldier. The affection of his kidneys began about a year and a-half ago, and was attributed to suppressed perspiration in his feet. He had then pain in the right renal organ, and the urine, which was scanty, was of a smoke-brown colour. It is now passed in considerable quantity, about three pints per diem, of a clear

colour, faintly acid reaction, of specific gravity 1015, occasionally it has coagulated on exposure to heat—at other times it has not. Examined under the microscope, on several occasions, it exhibited neither free oil-globules nor any fatty matter adherent to the epithelial scales. The man has evidently an unhealthy aspect, and a white waxy complexion.

A great deal of attention, I need not tell you, had been paid by medical writers to the various forms of dropsy and its proper treatment, for a long time before the period at which Dr. Bright commenced his researches; but it was not till the year 1827, when that gentleman published the first volume of his "Hospital Reports," that any notice was taken of the occasional existence of albumen in these cases. The discovery of this symptom may be said to constitute a new era in the history of dropsy, and to have given a new direction, as well as a fresh impulse, to the labours of scientific pathologists. Since its first publication, perhaps no single point in the whole range of medical science has been so steadily or so extensively investigated as the very one we are now considering; and when we remember the advantages that are possessed in the present day for such inquiries, the facilities of necroscopic examination, the ardour that is everywhere displayed in the pursuit of medical knowledge, and the distinguished men who have devoted their time and their energies to the question, it may well appear surprising that nearly twenty years should have elapsed, since the symptom was first noticed, before its real value should have been ascertained, and its true pathology unfolded.

The importance of this symptom was derived from a morbid condition of the kidney, which was found almost constantly associated with it, and which consisted in the

deposit of a peculiar yellow substance, in varying quantity, within the tubular portion of the gland. This substance, from its granular appearance on dissection, gave a name to the disease.

As this deposit, from its very nature, not only produced a mechanical impediment to the course of the circulation, but also led to other alterations in the structure of the kidney afterwards, the dropsy which resulted was properly classed along with those other forms of organic anasarca which depend upon cardiac and hepatic disease. It resembled them in its intractable nature, in its progressive development, and in its necessary tendency to shorten life. It differed from them in its proper seat, in some of its peculiar symptoms, and above all, in its constitutional origin.

In dropsy, depending upon this affection, three peculiarities of the urine were found commonly associated together. These were, its containing albumen, its specific gravity, and its scanty amount. At first it was supposed that the mere presence of albumen was of itself a proof of the existence of a granular state of the kidney. Subsequent experience corrected this opinion. It was found that the urine of many persons exhibited this property, who could not be supposed to labour under such a disease. Certain articles of food will produce it temporarily, and it is frequently met with in persons recovering from scarlatina. This latter has been explained by the hypothesis, that at such times a desquamation of albuminous matter, similar to the exfoliation of the cuticle externally, takes place from the mucous membrane of the tubuli-uriniferi, and, mingling with the urine, gives rise to the symptom. It was then imagined that if albumen could be detected continuously for a length of time, it might safely be inferred to exist. Even this is

not always the case. In dropsy, depending upon valvular disease of the heart, the urine frequently coagulates, because congestion of the kidney must necessarily result, and the serum of the blood, which contains albumen, escapes from the gorged vessels into the excretory ducts. Similarly, I have found it very well marked in cases of scurvy, where the attenuated condition of the blood favoured its transudation through the capillaries of the gland. In all cases, I believe, it indicates neither more nor less than this, that the serum of the blood is passing off by the urine. A granular condition of the kidney may certainly cause it, but it may also occur totally independently of such a state. Two other symptoms which were noticed in the case of Doris, and which are not unfrequently met with, seem also to depend upon the transudation of blood through the kidney: these are, the smoke-brown colour that the urine assumed, and its neutral reaction to test-paper. The former is caused by the ferruginous salts being acted upon *in transitu* by the sulphuretted hydrogen of the system; and the latter by the free alkali of the blood neutralising the acids proper to the secretion. Neither of them, it is manifest, indicates the existence of Bright's disease any more than the property of coagulating by heat: they suggest, however, one precaution to be observed in attempting to determine the presence or absence of albumen, and that is to acidulate the liquid slightly before exposing it to heat, because the ammonia, from its volatile nature, is easily expelled, and the earthy phosphates which are then precipitated might very readily be mistaken for flakes of albumen.

Low specific gravity, and deficient quantity, are both conditions of this secretion, compatible with health, when they exist singly, because they depend solely upon the

amount of water carried off at the kidneys. In hysteria, where the fluid is often enormous, the specific gravity is very little higher than that of ordinary water; and on the other hand, when a patient drinks but little, the specific gravity is relatively high. It is only when the two conditions coëxist—when the specific gravity is low and the quantity small, that we have reason to consider the patient's state unhealthy. Now, both of these are apt to occur in Bright's disease, because the deposit mechanically interferes with the secretion of the gland. In diabetes, on the contrary, the very opposite takes place. There is enormous secretion and high specific gravity.

In stating, however, that low specific gravity and deficient quantity, are the common attendants of Bright's disease, I must be careful to guard against misconception. Many persons are in the habit of considering them invariably present, but Christison has shown distinctly that both in the earlier and the later stages of the complaint, but especially the former, the quantity of urine passed may very nearly equal the average of health. The diminution of density, however, is in general very remarkable. The reason of this is obvious on a little reflection. The mechanical impediment, arising from granular degeneration, interferes less with the secretion of fluid than with that of the saline matters which determine the density. This change in the specific gravity is often sufficiently indicated by the ordinary urinometer; but evaporating and drying the residuum will of course ensure greater accuracy in the result. Dr. Christison informs us that he has known the solid contents reduced from 1340 grains in 10,000, to 700, 500, and even 400 grains.

I have already mentioned that it was not for nearly twenty years after the discovery of this disease that its real

pathology was ascertained. To Dr. Johnson, the author of a paper in the thirtieth volume of the "Medico-Chirurgical Transactions," this honour seems especially to belong. Among the other men of eminence who investigated the subject, may be enumerated Christison, Rayer, Graves, Osborne, Todd, Simon, besides the original discoverer, Dr. Bright. Still, though they failed to point out its real nature, they are entitled to the thanks of the profession for having thrown considerable light upon many points connected with its history. They ascertained its ordinary causes, its dangerous nature, and its connexion with various secondary affections. Thus, it was found that the inhabitants of large towns were more prone to its attacks than the rural population; that confinement, especially in dark and damp situations, predisposed to its development; that intoxication and unwholesome food commonly led to its production. Dr. Osborne has the merit of pointing out the tendency of suppressed perspiration to induce albuminous urine. Dr. Montgomery has shown that in pregnant women it is very frequently associated with puerperal convulsions, and that even the approach of an attack may be prognosticated by an examination of the urine. Other authors have pointed out the liability of persons labouring under this affection to suffer from pericarditus, endocarditus, apoplexy, &c. In the inferior animals the disease has been induced by direct experiments, calculated to impair the digestive and assimilating functions.

To explain more clearly the recent discoveries upon this subject, I may mention that it has been satisfactorily proved by Dr. Johnson to be really a fatty degeneration of the kidney, constitutional in its origin, altogether unconnected with inflammatory action, and analogous to fatty degene-

ration of the liver, but from circumstances hereafter to be explained, infinitely more dangerous in its effects upon the economy.

The three great excretory glands of the human body are, the lungs, the liver, and the kidneys. Each of these has, for its peculiar office, the elimination of an essential element from the organism. Thus: the lungs remove carbon; the liver hydrogen; and the kidneys nitrogen. Not that they eliminate these singly or exclusively; various combinations of these elements are formed, but all for the purpose of rendering their removal more easy by the channel that nature has provided for the purpose. Thus, the carbon of the lungs is combined with oxygen, to give it the gaseous form, whereby it is readily carried off during respiration; the hydrogen of the liver is united with carbon, to form the various fatty matters that analysis shews us to exist in the choleic acid and chlorestine of the bile; and the nitrogen of the kidneys is united with hydrogen and carbon to form urea and ammonia. It is true that a quantity of nitrogen has been proved to be exhaled at the lungs, and a quantity of fatty matter is carried off at the kidneys, even in health; but the amount is so small, relatively speaking, that it may safely be asserted that the proper channel for the removal of each is that which I have just now stated. Whenever any of these processes is interrupted from any cause, a noxious accumulation of these elements results, and more or less injury is the consequence. You are all familiar with this in the case of the lungs. You are probably less familiar with it in the case of the liver. If the fatty matters, which are composed of hydrogen and carbon, be not removed in sufficient quantity, they accumulate in the vascular system, the blood becomes loaded with them, and a deposit takes place, first, into the parts natu-

rally adapted for their reception—the subcutaneous cellular tissue, the omentum, mesentery, &c., and finally into other parts not at all designed for the purpose—the muscular tissue, the cells of the liver and kidneys, &c., constituting fatty degeneration of these parts. The danger, however, is not equal in these various situations. In the liver, from the lax nature of the cellular matrix, and the facility with which it admits of enlargement, this lesion may exist to a considerable extent without interfering materially with its proper function. In the kidney, on the contrary, from the dense arrangement of the parts, such a thing is impossible; congestion of the vascular apparatus necessarily results, producing the hypertrophied and mottled appearance which is described as the first stage of the complaint. Subsequently, as the pressure increases, the nutrition of the gland is interfered with, atrophy takes place, and the kidney becomes pale, small, and lobulated. This is the advanced stage.

That the disease is really due to the retention of these fatty matters in the system, and especially to their accumulation in a part unfavorably circumstanced for their reception, is proved not merely by a minute examination of the granular matter itself, but by a variety of other considerations which are worthy of your notice. If a patient, labouring under the disease, be bled from the arm, and the serum be allowed to separate from the crassamentum, it will exhibit a milky appearance from the presence of oil-globules, which can be removed by digestion in æther. Again, it has been noticed by Dr. Johnson, as the result of his post-mortem examinations, that Bright's disease is frequently associated with atheromatous deposits in the arteries, which, you know, are really of a fatty nature, and still more frequently, with fatty degeneration of the liver.

The pale, waxy complexion that patients labouring under this disease exhibit, is, perhaps, due, not so much to the loss of blood, which is constantly oozing through the obstructed kidneys, as to the quanty of fat which is accumulated under the tegumentary membranes. It is a remarkable circumstance that we do not find emaciation to occur in these cases to the extent that we might naturally expect in so chronic a complaint. But the principal argument in support of this view, is that which is derived from microscopic examination of the urine. This secretion properly consists of two parts—the water and the saline ingredients; the former in health is a simple percolation from the open capillaries of the Malpighian tufts; the latter is accomplished by means of epithelial scales, which are detached from the inside of the tubuli uriniferi, and which grow from time to time by an inherent vital action. The mechanism of these parts, as will be obvious at a glance of this drawing, is admirably contrived to facilitate this process. The stream of liquid, in its descent through the tubuli, washes away the scales as they are formed, and both mingling together, constitute the secretion such as it exists. These scales can be readily recognised by the microscope, as I have pointed out to you on several occasions. In health, they are quite free from any adherent fatty matter, and the fluid contains scarcely a trace of any oil-globules. In Bright's disease, on the contrary, both of these appearances become conspicuous in proportion to the extent of the mischief. In acute nephritis and scarlatina, the number of these scales is augmented, but their size is diminished, and they evidently give the idea that they have not arrived at maturity. In the case of our patient, the absence of these characteristic appearances in the urine led me to conclude that he did labour under granular degeneration of

the kidney, notwithstanding the many points of resemblance to that disease which his symptoms presented.

Let us now inquire how this theory will explain the operation of those agencies, which are ascertained to be the common producing causes of the complaint. These are, you may remember, intemperance, confinement, and unsuitable food. In fact, it is by the employment of these means that the disease has been artificially produced in animals by Dr. Johnson and others. Intemperance acts by introducing into the system oleaginous fluids of weak power (alcohol being, in fact, a combination of two atoms of olefiant gas and one of water), and perhaps, also, by its peculiar action on the lungs; for it has been ascertained, that while the primary effect of stimulating liquids is to accelerate the respiration, the remote effect, on the contrary, is to diminish both its frequency and force.

Confinement and bad air operate obviously, by depriving the economy of its proper quantity of oxygen. In health, when oxygen is freely supplied to the system, the carbon is consumed as carbonic acid, and the hydrogen as water. In the circumstances here supposed, these effects cannot be adequately accomplished, and the retained carbon and hydrogen enter into combination, and form fatty matters of various kinds. Innutritious diet, or that which is deficient in animal substances, acts injuriously from the want of nitrogen; for you are aware that ammonia consists of one atom of nitrogen and three of hydrogen, consequently, a free supply of nitrogenous matters must tend powerfully to get rid of one of those elements upon whose existence in the economy this disease depends.

I think it unnecessary to tell you that the treatment of this affection, before the present theory was propounded, was as uncertain and unsatisfactory as possible. The most

opposite remedies were recommended for its removal, but the only opinion in which all authorities seemed to agree was in its incurability. Tartar emetic and bleeding, assisted by local cupping, were adopted by some, under the idea that it was a real but peculiar nephritis. Diaphoretics internally, and vapour baths, were trusted in by others, under the impression that it resulted from suppressed perspiration; and others again adopted diuretics upon no very intelligible principles, though the general impression of the profession was decidedly against their use.

Now, on the contrary, instead of this confusion, our course becomes easy, intelligible, and simple; and though we may not anticipate success in every instance, we can clearly perceive that there is nothing in the nature of the affection to render it necessarily incurable or fatal. The microscope not only enables us to distinguish real granular degeneration, and those congestions of the kidney which are liable to be mistaken for it, but it enables us to do so at that very period in the history of the complaint when the diagnosis is important. However dangerous the disease is in the advanced stage, at the earlier periods it is certainly capable of alleviation, if not of cure. The obvious course of proceeding in any such case would be,—1st, to remove the exciting and predisposing causes, where they exist, such as intemperance, and residence in an unwholesome atmosphere; 2nd, to oxygenize the blood by active exercise in the country and in the open air; 3rd, to avoid fatty, and all other non-nitrogenous articles of food; 4th, to administer alkalies in free doses, which, by their action on the animal fats, will probably render their elimination more easy of accomplishment; and 5th, to administer purgatives, so as to keep up a tolerably free action of the bowels. It is not necessary for me to say anything at pre-

sent of the treatment pursued in reference to the case of Dorris, as it does not bear upon the subject before us. I may hereafter return to this point, and shall then explain both the principles which guided me in the measures I directed for his relief, and the advantages which followed from their adoption.

LECTURE VI.

APPARENT PHTHISIS—REAL PNEUMONIA—DIAGNOSIS—APPARENTLY INCONSISTENT BUT SUCCESSFUL TREATMENT.

GENTLEMEN,—I intend to call your attention this morning to the case of James Long, a man forty-nine years of age, whose symptoms presented some resemblance to consumption, though he was really labouring under pneumonia. Under any circumstances the diagnosis is important, because the treatment of the two affections is essentially different; but it becomes still more so in the present instance, because of the man's advanced age, and of his exhausted condition.

If a careful examination of his symptoms had led me to consider him affected with consumption, I need scarcely say that I should not have been justified in resorting to any very active measures in his case; but having arrived at the conclusion that his disease was pneumonia, I felt myself at liberty to adopt remedies which would have been positively injurious had he laboured under consumption, but which were calculated, under existing circumstances, to promote his recovery.

These diseases, as they are usually met with in practice, are attended with such characteristic symptoms and signs, that very little difficulty can be experienced in distinguishing them from each other. Occasionally, however, cases do occur (of which the present may be taken as a fair specimen) where the diagnosis can be established only after much care has been expended in the examination of the patient.

The history of the man's case is simply this: For the last twenty-five years he has suffered from stricture of the urethra, for which he has been obliged to undergo repeated operations. About a fortnight or three weeks ago, he left this hospital, having derived considerable benefit from the surgical treatment resorted to on the occasion. Then, for the first time, he was attacked with a severe cough and expectoration. Previously, he states, he might have suffered at times from a *slight* cough, but never to any extent; nor did it continue for any time. When I first saw him, not only was his cough frequent and severe, but he was extremely emaciated; his pulse was frequent (108 in the minute) and very weak; there was apparent sinking in under both clavicles, and slight dulness on percussion over the right one; while the expression of his countenance was not at all unlike that of a person labouring under consumption. So far the symptoms corresponded with such an hypothesis; but here the resemblance ended. We have now to look at the opposite side. Besides the brief period which had elapsed since these symptoms were first noticed, we found he had never suffered from diarrhœa, or night sweats, and he had never had hœmoptoe. The expectoration was rusty and viscid, exactly such as occurs in pneumonia. Percussion was dull over the upper and middle regions of the back of the right lung. Bronchial respiration was audible between the right scapula and spine. Below the inferior angle of this bone, a distinct muco-crepitating râle could be heard; the tongue was dry, and covered with a whitish yellow fur; there were thirst and complete loss of appetite, while the urine was scanty and scalding.

In this sketch I have arranged these symptoms in four distinct series. In the first, are placed those which are compatible with the idea of consumption; in the second,

those which are not so; in the third, those which belong to pneumonia; and in the fourth, those which are purely febrile.

Assuming for the purposes of analysis that the man's statement is correct, and that he never suffered from any serious attack of cough till the period of his recent discharge from the hospital, there are only three hypotheses which can be adopted consistent with the notion that he is labouring under consumption in any form, and these are, first, that the variety of phthisis with which he has been attacked is the acute one; secondly, that it is the latent one; or thirdly, that an attack of pneumonia has supervened upon an old and latent consumption. In no case can we suppose that he is suffering from the disease in its ordinary form.

In ordinary consumption, the tubercular matter, which may be regarded as the essence of the disease, is deposited at first in small quantity in the apex of one or both lungs, where it undergoes gradually the process of softening and evacuation, producing in its progress all the physical signs which characterise the affection. Subsequently successive deposits of fresh tubercle take place, encroaching more and more upon the healthy portion of the lung, but always making progress from above downwards, until at length the patient dies either from gradual exhaustion or some of the secondary accidents that accelerate the fatal issue. The duration of the attack is protracted; the physical signs are well marked, and the accompanying hectic obvious.

Not so, however, in the acute variety. Here the deposition of tubercle is neither gradual nor successive: it seems to be instantaneous and uniform, not collected at the apex for a time before it appears lower down; nor undergoing there its specific changes of maturation and removal, but diffused equally in all portions of the pulmonary tissue at

one and the same time; and proving destructive to life by its mechanical interference with the function of respiration. It does this before it has had time to soften and be evacuated: hence death takes place at a very early period, often before three weeks have elapsed from the first invasion of the disease; and post-mortem examination discovers either no excavation at all, or only those of the smallest dimensions.

In its general aspect, acute phthisis resembles an attack of typhus fever: there is great disturbance of the system at large and well-marked pyrexia. Often the attack is ushered in with a distinct and severe rigor; often it succeeds to the ordinary causes of common fever, such as exposure to cold, a heavy wetting, or sitting in damp clothes. In all cases the skin is hot, the pulse quick, the appetite fails, thirst becomes developed, and there is great prostration of strength. Still a careful observer would detect at once that it differs from real fever in the exemption of the nervous system from participation in the general disturbance; the intellect is clear; the eye bright; there is no headache nor stupor, and the patient's repose is comparatively undisturbed. His countenance, too, fails to indicate the oppression that is constantly exhibited in fever, and which a practised eye can so readily detect.

The doubt at first suggested by the absence of marks so striking in themselves, and so characteristic as those just referred to, is still further confirmed by the development of others prominently pointing to the organs of respiration as the seat of the disturbance which produces them. These are, cough, dyspnœa, and hœmoptysis.

If you listen attentively to the patients in the ward of an hospital as you hear them coughing in their beds, you will soon, I think, arrive at the conclusion, that a different kind of cough attends the various affections of the lungs,

and that you may even from this circumstance alone, in many cases, predicate what the precise lesion is under which they are suffering.

This is a point not generally noticed in the ordinary text-books, and the attention of pupils is consequently but little directed to its investigation. If more time were spent by medical students in personal clinical observations—noting down symptoms—watching the progress of cases, the effects of remedies, and the various minor changes that are continually occurring in the patients—in fact, if they spent more time in the wards than is usually done, they would undoubtedly reap much more advantage from their hospital attendance than they generally do.

It is not perhaps easy to describe these different varieties of cough in so many words; the only true method of becoming familiar with them is to use your own ears on every occasion, and not to be satisfied with the simple statement, that the patient's cough is troublesome, or the reverse. In pleuritis the cough is short, impeded, and suppressed: in bronchitis, full and open: in hooping-cough, it occurs in paroxysms threatening instant suffocation: in consumption, it varies with the stage: in the early period, before softening has taken place, it is short and dry: in the advanced period, it is hollow and moist: in pneumonia, on the other hand, it is mixed; the hardness and restriction which arise from pulmonary consolidation being modified by the relief that follows the effort of expectoration. In the case of acute phthisis, the cough has all the hardness, frequency, and absence of expectoration that characterise the early period of tubercular irritation, while the minuteness of the deposit, as contrasted with its ordinary development, causes it still to present some resemblance to the cough of bronchitis.

Dyspnœa is often a most striking symptom in these cases: the number of the miliary tubercles compensating effectually for their small size, and the suddenness with which they are deposited, causing a degree of disturbance in the lungs that would not be produced were the same amount of mechanical impediment to their expansion brought about more gradually.

Hœmoptysis, though a common enough attendant upon the early stage of ordinary phthisis, is much more constantly met with in the acute variety than in any other, because the congestion of the bronchial mucous membrane upon which it depends is greater. I do not agree with Louis in looking upon spitting of blood as an almost certain evidence of the existence of tubercles; on the contrary, I am satisfied that both in pulmonary apoplexy and cirrhosis of the lung, it is a very constant occurrence; but when it is met with under the circumstances now detailed, when it appears in the midst of a brisk febrile attack, attended with marked evidence of bronchial irritation and dyspnœa, while the nervous system is unusually free, I believe it will be found almost invariably connected with their development; at least it is a symptom scarcely, if ever, observed in ordinary acute bronchitis.

In estimating the physical signs of this variety of consumption, we have no greater difficulty to contend with than the want of a standard of comparison. Diffused uniformly throughout the chest, both in the upper and lower lobes on each side, as the tubercles are, the only physical changes they can produce are, a slight diminution in the percussion sound, and the sonorous and sibilous râles of bronchial irritation. The diminution of the percussion sound is so slight that it may fail to attract attention at all; and even when it does, the uniform manner in which it

prevails over the chest must create a doubt in the physician's mind whether it is not natural to the person examined. Coupled with this, there is the absence of emaciation—one of the earliest, most constant, and alarming symptoms of the ordinary form, but which, from the rapid progress of the cases under consideration, is seldom very obvious in the acute variety. If we except the hœmoptysis already alluded to (which is almost always present), and the degree of dyspnœa which is much greater than any that occurs in idiopathic bronchitis, there is really nothing in the signs or symptoms of these cases that indicates with certainty their tubercular origin. There is, however, one circumstance that becomes manifest in due time, and that appears to me to remove all doubt from the mind of the practitioner on this subject, and that is, the little impression that treatment makes upon the affection. Ordinary bronchitis yields readily to treatment; even when it is not speedily and completely cured, it undergoes such an amelioration as to prove its amenability to medicine. Not so, however, here: the bronchial irritation remains as obvious, and the râles as intense, after the most judicious measures have been adopted for the patient's relief as before. Whenever you find this to occur, you have good reason to suspect the fearful nature of the malady you have to deal with.

It is not necessary, I think, to point out to you how little resemblance there is between Long's case and the affection I have been endeavouring to describe; the dulness was well marked and distinctly circumscribed; the bronchitic râles were entirely absent, except in the portion where the dulness existed; the dyspnœa was not intense, and the cough had not the characteristic features of tubercular irritation. In no point of view could it be considered as an example of acute phthisis.

But there is another variety of consumption that is frequently met with, and which it might be supposed that our patient was labouring under, and that is the latent, where, owing to the slow development of the tubercles, the usual symptoms of the disease—cough, dyspnœa, and expectoration—do not become manifest till a very late period indeed. When, at last, suspicion begins to be roused, and the chest is explored, distinct evidence of the destructive character of the disease is afforded by the physical signs of extensive disorganization of the lungs. Little as such a thing might be anticipated, *à priori*, Louis assures us that latent phthisis occurs very frequently, and that one-eighth of the total number of cases of consumption are so during some portion of their course. It is usually met with under one or other of two forms. In the first the patient appears to have got an ordinary cold, a fit of shivering takes place, and then the usual symptoms of pyrexia are established, but without anything to direct attention to the chest (in this respect, differing remarkably from the acute variety just described); he has neither cough, hurried respiration, local pains, nor expectoration. By degrees he recovers somewhat, but not perfectly; he is able to resume his employment, but he continues weak; his appetite does not return, and his pulse remains permanently accelerated. After a time (which is often a long time), it may be months or years, a sudden change takes place, the patient gets a cough, expectoration is set up, and all the ordinary symptoms of consumption declare themselves. This may occur after a second exposure to cold, or independently of any obvious cause: in the former case, there is some risk of a mistake being committed in referring the commencement of the malady to the period at which the affection became manifest, and not to that at which the patient's health began to

decline. In the second form the attack is ushered in by diarrhœa, which continues a long time, partially yielding to the remedies employed, but returning again and again in spite of the greatest care in diet, regimen, and treatment. Emaciation and debility, which are naturally attributed to so exhausting a disease, are the only other symptoms of which the patient complains. Should he ever cough, it is so slight as to be scarcely noticed; it is not in any way distressing, and it has none of the characters that would excite suspicion as to its source. It is not surprising, then, that such cases often continue a long time before their real nature is detected. But if you examine them attentively, whenever you have an opportunity, you will find that both the emaciation and the debility are far greater in degree than the diarrhœa will account for. The emaciation, in particular, will give you valuable information. When it depends solely upon the exhausting discharges, it will be equally obvious in all parts of the body, but when it is symptomatic of tubercular irritation, it will be most marked about the shoulders and upper part of the chest, especially upon that side where the greatest extent of tubercle is deposited. It may not be easy to account for this phenomenon upon rational principles, but I am satisfied that what I have stated is the fact. You will find in Louis's work several examples of both these forms of latent phthisis. Whatever be the manner in which the disease commences, by the time a suspicion of its true nature begins to be entertained, structural disorganization of the lungs is generally pretty far advanced. Indeed it is not unusual to discover, on a first examination, well-marked cavities of a large size in patients who, up to that period, had been supposed perfectly free from so serious a complaint. It is impossible to understand why the same mor-

bid matter should at one time produce excessive irritation in the organs where it is deposited, and at another in precisely the same situation and circumstances, produce no irritation at all; yet we are constantly observing these anomalies in practice. The explanation that is usually given is, that it depends upon idiosyncrasy of constitution: a statement that seems to be corroborated by the fact that examples of latent phthisis are almost invariably confined to females. But there is another principle which appears to me to apply to cases of this kind, and to afford a more satisfactory solution for the apparent anomaly, and it is this:—Whenever two morbid actions coëxist in the economy, that which is more intense masks the other for the time. Thus it is that acute hydrocephalus often runs its course unperceived during the progress of remittent fever; that pneumonia is latent during delirium tremens; and that diabetes, when about to terminate in consumption, as it frequently does, ceases to exhibit its ordinary features. This is not an accidental circumstance in the history of disease, but a wise provision of nature to diminish the sufferings of the patient in cases where they would otherwise be unusually severe. In my mind the diarrhœa of latent phthisis should not be regarded as the mere expression of a peculiar sympathy between the alimentary canal and tubercular irritation in the lungs, but rather as the direct result of an irritation in the muciparous follicles of the intestinal tract itself, and springing from the deposit of tubercular matter there.

To return to the case immediately before us. The protracted period during which Long suffered from urinary irritation, with its sleepless nights, its distinct emaciation, and its broken health, was not at all unlikely to lead to the development of pulmonary tubercle in a person predisposed to

an attack ; and it is easy to conceive that a slight cough and trifling expectoration might very readily escape attention under the pain and suffering he must have endured. But then were this the case, the slow and silent progress of this insidious malady would have produced, by this time, the unerring evidence of cavities in the chest. A careful examination satisfied me that such a state of parts did not exist, and that if there were tubercles at all, they must have been in the crude state, a condition inconsistent with the hypothesis we are now examining. But I may mention one or two circumstances calculated, when taken with what has been already stated, to show that he cannot be affected with tubercles at all, and, therefore, sufficient to discard the third idea I started with, namely, that he is labouring under a recent pneumonia, superinduced upon an old consumption. First, his debility is not great enough for such an hypothesis : the prostration of strength that accompanies phthisis is most distressing, even in the latent form, but here he neither complained of it himself, nor did it appear obvious to the attendants. Secondly, the condition of the tongue was altogether different from what is met with in consumption ; it was evidently a febrile tongue covered with bilious fur : whereas that of consumption is more or less red and glazed, as if the epithelium were carefully peeled off; and lastly, the fingers did not exhibit the thick, clubbed appearance, so characteristic of consumption in its advanced stage.

But in deciding that Long's complaint was pneumonia, as indicated by the rusty expectoration, the bronchial respiration, the crepitating râle and the fever, it is necessary that I should call your attention to the circumstance, that these physical signs did not observe the same course they usually do in this disease : the consolidation occupied the

middle portion of the lung, while the lower, from the point of the scapula to the base of the chest, was free; and the crepitus was audible at the inferior margin of the hepatised portion, and not at the superior. This in itself might create a doubt as to the nature of the case, and would evidently give additional weight to the *prima facie* resemblance to consumption. But pneumonia, like every other morbid action, occasionally deviates from its normal course, and these aberrations are especially apt to occur in persons already labouring under other diseases, so that a knowledge of our patient's history rather corroborated the idea of its being pneumonia than otherwise.

Having decided in my own mind the nature of the man's disease, I proceeded to treat it in the way that seemed best adapted for his peculiar condition. I had him cupped behind the right shoulder, and put upon calomel, ipecacuanha, and opium, in small doses, given every second hour, while his strength was supported by four ounces of wine daily. To many this practice will appear inconsistent, and in ordinary circumstances it certainly would not be justifiable to administer wine when we are endeavouring to reduce inflammation by depletion and mercury. But every case must be treated by itself, and in the exhausted conditisn of our patient it was not only necessary, but judicious. Many persons never give stimulants unless they see them to be absolutely essential to save the life of the patient. I cannot too strongly condemn such a principle of practice. You are bound morally, if not legally, not only to preserve life, but also to shorten suffering as much as possible, and, consequently, to use every means in your power to restore your patient to health and strength. I am satisfied that if a due attention were paid to the proper administration of stimulants in conjunction with debilitating remedies, many

lives would be saved, which, from timidity, ignorance, or mistaken prejudices, are now, unfortunately, lost. I believe that in almost every case where mercury is administered, tonics and stimulants may be advantageously resorted to, just at the period when the mouth is beginning to be touched: a collapse of the vital powers corresponding to the resolution of the inflammatory action takes place at the time, and demands the cautious but steady exhibition of suitable excitants. The fluttering about the heart, wakefulness, uneasy sensations, and tendency to fright, that patients saturated with mercury are apt to suffer from, call especially for remedies of this kind both of the diffusible and permanent class.

In cases where the inflammation is of a low character from the first, and when the patient has been greatly reduced from age and previous suffering, you will often find it an advantage to commence the use of stimulants earlier. It was upon this principle I ordered them in the case of Long, and you see with what benefit. The pulse fell the next day from 108 to 96; the cough was easier and less frequent; the tongue cleaner; the stethoscopic signs improved; on the 17th and 18th the improvement went on steadily increasing, though he suffered greatly from urinary irritation; and on the 22nd all evidence of the pneumonia had disappeared; from this date our attention was entirely directed to the relief of the bladder affection, but I will not occupy your time at present by detailing the treatment that was adopted, merely remarking that even in this respect his condition has been made comparatively comfortable. The urine has assumed a natural appearance; he can pass it with tolerable ease, and in much greater quantity than he could previously, and he gets, what is everything to a poor invalid, a comfortable rest at night.

LECTURE VII.

TRUE PNEUMONIC ABSCESS—DIAGNOSIS ON ADMISSION—VERIFIED BY INSPECTION FIVE DAYS AFTERWARDS.

Gentlemen,—The case which is to form the subject of this morning's lecture is one that presents a great many points of interest to your consideration, which shall be duly noticed as we proceed: at present I shall content myself with remarking, that it is an instance of true pneumonic abscess, a disease remarkable for its rarity, and still more so from the circumstance that just at the present moment the highest legal functionary in the kingdom, whose illness, from the public notice it has attracted, you must have all heard of, is suffering from the same affection. I make this statement upon the authority of Dr. Mollan, the brother-in-law of the Lord Chancellor, who is in close attendance upon his distinguished relative. Before proceeding to explain the circumstances that render this complaint so rare, in comparison with other inflammatory affections of the lungs, it is proper that I should give you some account of the patient who was affected with it, the examination of whose body you had yesterday an opportunity of witnessing.

James Doran, a labouring man, aged 42, came up from the county Wicklow, and presented himself among the extern patients of the hospital, on Saturday morning, the 8th of January, 1848. He complained of total inability to swallow, and of extreme difficulty of breathing. Under the idea that possibly he might be affected with internal

aneurism, he was immediately submitted to me that I might make a careful examination of his chest, and ascertain whether such a lesion existed or not. I found considerable difficulty in getting a distinct history of his case, from the extreme rapidity of his respiration, which amounted to 40 in the minute. In replying to a question, he was obliged constantly to stop and take breath. He said his illness was caused by violent exertions, which he made last August to extinguish a fire that took place near where he lived. He got into a great perspiration, and sat down in an open field without his clothes for some time. Dysphagia came on gradually, and at the time of his admission it was equally difficult for him to swallow fluids as solids. A careful examination of the man's condition and symptoms led me to reject at once the idea of his suffering from aneurism. External inspection of his chest afforded no grounds for such an opinion; there was no fulness above either clavicle, nor any perceptible prominence in the upper and anterior part of the thorax, where such tumours, from their anatomical connexions, usually present themselves; there was no pulsation to be detected anywhere, nor any evidence of vascular compression. We had no œdema of either arm, or of either side, no difference of the pulses at the wrist, and no stethoscopic evidence in favour of the opinion. The situation, impulse, and sounds of the heart, were all natural; and although some dulness existed in the region of the left mamma, it was evidently unconnected with disease in the vascular system. Even in the descending aorta no bruit could be detected. Percussion, too, though nowhere very resonant, failed to point out any localized dulness in the direction where aneurism, if it existed at all, ought to have been found. But these negative signs, conclusive as they were, possessed an infinitely greater force from the consi-

deration, that, if the patient's dyspnœa and dysphagia depended upon the pressure of an aneurism, it must have attained a size sufficiently great to interfere with some of the large trunks in the thorax. I believe you will find the following observation borne out in practice; a *small* aneurism, if favourably placed for the purpose, may produce either dyspnœa or dysphagia singly; from the relative position of the trachea and œsophagus it cannot produce both; whereas a *large* one, though still far from the surface of the chest, may do so. Hence you are warranted in concluding, whenever you find these symptoms coëxisting, that if they depend upon aneurism, it must be of considerable size.

But even these symptoms themselves—dyspnœa and dysphagia—when closely investigated, failed to give countenance to the idea. The very fact that his dysphagia was equally great with fluids and solids, proved that it depended not so much upon direct mechanical impediment, as upon spasm; and on asking him to point out the situation where the embarrassment to deglutition lay, he pointed to the throat generally, and declared his inability to fix upon any precise spot where he felt it more than another. I need not remind you that the dysphagia of an internal aneurism is seated low down in the chest, behind the sternum, and not in the throat. Then, again, the attempt to swallow, instead of bringing on vomiting, as it ought to have done, were it connected with mechanical construction, invariably induced a fit of coughing, and a suffocating sensation as if he were choking. The larynx was preternaturally large, hard, and tender to the touch externally, and I could not help concluding, that the extreme shortness of his breathing was, in part at least, the cause of the difficulty of swallowing.

Having dismissed the idea of an aneurism from my mind, it became necessary to prosecute the examination of the case further, with a view of ascertaining the true nature of the complaint under which he was labouring. The first symptom that arrested my attention was the extreme fœtor of his breath: it was so offensive that it was almost impossible to stand near him, even for the purpose of making an examination: it had, in fact, quite a gangrenous character. Like many other patients similarly circumstanced, he was not conscious of it himself, but he admitted it had been noticed by others. It was not, however, constant, but seemed to be connected with his expectoration rather than with his breath. It was only when he coughed up some of the matter which you saw in the abscess yesterday, and which had precisely the same odour, that this intense fœtor could be observed. This is a point deserving your attention, as assisting to distinguish gangrene of the lung from pneumonic abscess. Many persons confound these two affections, but they are really distinct, and the diagnosis is of great importance. Gangrene is much more common than abscess, but the latter is more amenable to treatment. When a patient is attacked with gangrene, his breath has the characteristic odour, which never leaves him but with life; but in pneumonic abscess, though the breath is occasionally fœtid, yet as this depends upon the expectoration, it is only when he has just spit up that the symptom is perceptible.

The other symptoms of his case were these: complete dulness of the lower half of the right lung, which was found on measurement at the level of the mamma to be half an inch larger than the left; the dulness became greater the nearer the base of the lung that percussion was practised; there was marked bronchophony, almost amounting

to œgophony, in the posterior portion of the dull part of this lung, while in the anterior, respiration was entirely suppressed. In a circumscribed spot about three inches below the right axilla, and on a level with the right nipple, cavernous respiration, with gurgling and metallic tinkling, was detected; the cavernous respiration was extremely well marked; the other phenomena, though sufficiently distinct, were less intense; a little above this situation, pectoriloquy in a most perfect form existed. The intercostal spaces were everywhere manifest; the voice reverberated naturally except in the dull portion; his body was greatly emaciated; his pulse 116, and very weak; he had no diarrhœa nor night sweats, and his cough, which was trifling, was not troublesome except at night. On closely questioning him, I ascertained that shortly after he was first attacked, he observed a sensation of an inward tickling in the right side, after which something would "trickle up," to use his own expression, towards the neck, when a fit of coughing would come on, and a small quantity of yellow matter would be brought up, destitute of smell and taste.

The physical signs just enumerated naturally pointed to the existence of pleuro-pneumonia of the base of the right lung with an abscess deeply seated in the middle lobe on a level with the nipple, and about three inches below the axilla. This diagnosis thus made, and which you saw verified at the autopsy yesterday, was written down the next day on the patient's card—a circumstance particularly fortunate, as these happy hits are so often made or mended after the revelations of the dissecting-table, for I understand that some of the pupils who had not observed the case during life, went straight up from the examination of the body to the ward in which he had lain to ascertain the fact, and found the statement staring them in the face.

But to return: these signs, so obvious on the first day, as the gentlemen who were with me can testify, became less distinct subsequently, insomuch that a superficial observer listening for the first time would have some doubt as to the reality of their existence. Now as we know that their production depends upon organic alterations in the lungs, which cannot be removed in any very short space of time, it is plain that when their existence has been once satisfactorily ascertained, we ought naturally to look for their continuing with equal distinctness afterwards. How, then, are we to explain the deviation in the present instance? You must have noticed that the abscess, as revealed by dissection, was almost entirely filled by that offensive matter of which I have already spoken; and that it was of a peculiarly tenacious character, so that it did not possess the fluidity of ordinary pus. The consequence of this was, that it could easily choke up the air-tubes leading to the interior, and thus prevent the development of those sounds—pectoriloquy, gurgling, and cavernous respiration—by which the existence of the abscess was diagnosed at the first; and that this was the true explanation of the difficulty, was proved by the mere effort of coughing at any time restoring these signs to their original distinctness.

Let us now suppose that, from a careful examination of the physical condition of the chest, we have arrived at the conclusion that an abscess existed at the spot already indicated, how are we warranted in pronouncing that abscess to be pneumonic and not tubercular? I need not tell you that tubercular cavities are as common as the others are rare, and that the *prima facie* probability is strongly in favour of the phthisical nature of the disease. The situation, indeed, supposing it to be correctly indicated, is not that of an ordinary vomica, but irregularities in this respect

are frequent enough to make us pause before resting implicitly upon that point alone.

Let us look a little more closely at the general symptoms, to ascertain what light they are likely to throw upon this question, for as the case stands, the physical signs *per se* are incapable of determining it.

Several of these, the emaciation, the rapid weak pulse, the duration of the complaint, and the chronic affection of the larynx, all countenanced the idea of its being really tubercular; while on the other hand, several circumstances connected with the case, evidently militated against it. If the disease were really phthisis, it was reasonable to infer, from the period that had elapsed from its supposed commencement, as well as from the fact of the existence of a cavity, that it must have been in the third, or advanced stage of the complaint, whereas he had neither the perspiration nor the diarrhœa that are the usual accompaniments of that stage. So far the reverse, his skin was hard, and dry, and scaly, indicating a suppression of the natural secretion of the part, and his bowels did not act without the assistance of medicine. I do not lay much stress upon the reputed cause of the man's illness, because it is always difficult to obtain really correct information upon matters of this kind; yet assuming his statement to be well-founded, it was a circumstance much more likely to produce an inflammatory affection of the chest than to develop tubercles in a man previously healthy, resident in the country, and arrived at the forty-second year of his age.

I have already mentioned the extreme dyspnœa under which he was suffering, indicated by the rapidity of his respiration, but I have not mentioned that this was attended with marked lividity of the lips, a point deserving consideration from the rarity of its occurrence in consump-

tion. Lividity of the lips, as it commonly appears in chronic bronchitis and emphysema, is the result of the want of the natural proportion between the quantity of blood circulating in the vessels, and the capacity for aërating it possessed by the lungs. Disturbance of the proper relation between these two never arises from mere hyperœmia, because, however great the quantity of blood, the lungs in the healthy state are adequate to arterialize the whole sufficiently. The case, however, is different, when the natural structure of the lungs is altered, because then their efficiency as a depurator of the blood is destroyed, and the carbonic element accumulates in the system. Still it is a remarkable fact that in consumption, notwithstanding the progressive disorganization that takes place in the lungs, often leaving a very small portion, indeed, in a state to fulfil its function, neither lividity of the lips, nor extreme rapidity of respiration, are by any means common symptoms: the reason of which is this, that a diminution in the quantity of the blood takes place at the same time with the destructive process in the chest, and thus the essential ratio of the one to the other continues to be preserved. Regarded in this light, the exhausting perspirations and the protracted diarrhœa are a sort of safety-valve to relieve the system of its superfluous fluids, and to make the descent down the hill of life less distressing to the patient.

Fœtor of the breath is occasionally met with in consumption, though it must be admitted to be comparatively rare. I believe that when it does occur, it is due to sloughing of the walls and cellular membrane of the vomicæ, which become detached, and putrify. The extreme degree, however, in which it existed in Doran's case, was altogether incompatible with such a supposition, and in point of fact it was

this symptom that first led me to suspect the nature of the malady, and to search for its proper seat.

But probably the most important argument of all was to be found in the enlargement of the lower part of the right lung, coupled with the consideration that the solidification was confined to that part. Tuberculization, except, perhaps, in some rare cases of acute phthisis, never leads to an augmentation in the volume of the organ. The chronic nature of the complaint in the present instance excludes these few exceptional cases, and hence we are justified in inferring that we had not solidification from tubercles to deal with. It is true that anteriorly we had reason to believe fluid existed at the base of the lung, which might account for the enlargement, but even this will not get rid of the difficulty, in consequence of the complete absence of tubercles in the upper lobe. Pleuritic attacks in phthisis (with the solitary exception of that depending upon rupture) are invariably lymphy or dry—the reason of which is obvious: they are designed in the economy of nature to act a conservative part, and to guard against internal laceration. Effusion, however, does occur occasionally, but always as a consequence of the sudden giving way of the pleura in some part where this adhesive process has not taken place; the contents of the vomica escape into the thorax, the side is enlarged, the lung compressed, and a fistulous opening, with its characteristic signs, is established. In that case the tubercles occupy the upper portion of the chest, while the lower remains free. Were the lower lobes solidified, the effusion would be restrained, but what is more important, the mechanical condition of the lung would be such as to prevent the injury occurring. The very supposition, then, of the lower part of the lung being solidified, precludes the possibility of such an occurrence.

The diagnosis from gangrene remains to be discussed. I have already said, that rare as gangrene of the lungs is, it is still more frequently met with than true pulmonary abscess. It occurs sometimes in connexion with pneumonia, but on other occasions it appears to result from a septic condition of the fluids, the consequence of want and misery, as in the very poor; of neglect, or, more probably, of depraved habits, as in epileptics and lunatics; of extreme intemperance; and of the introduction of certain poisons into the system, either by inhalation, as in nightmen, or by the bite of insects, as in a case recorded by Carswell. Under all circumstances, it is an acute disease: if you look into "Simon's Pathological Anatomy," you will find that he mentions there are but two or three instances known of its occurring in chronic inflammation of the lungs. When it succeeds to acute pneumonia, it appears to result from the intensity of the inflammation occurring in an unhealthy state of the constitution. In this respect our case differed widely from the common features of gangrene. But further, its occurrence is always attended by a marked collapse of the vital forces, indicated by exhaustion of strength, feebleness, and irregularity of the pulse, change of the features, coldness of the extremities, and tendency to faint. In Doran's case we had none of these symptoms: he was able to walk about without assistance; his pulse, though frequent and small, was regular; his countenance had a natural appearance, and, so far as he was able to swallow, his appetite was good.

I need not tell you that the prognosis in this case was from the first of the very gravest character: a man breathing from forty to forty-four times in the minute, with a pulse varying from 116 to 120, and extremely small, who had been six months ill, and who was scarcely able to

swallow anything, was not likely to be materially benefited by anything we could do for his relief. All that could be done was to support his strength by wine, porter, strong animal broths, and whatever other nourishment he could take. External friction, with mercurial ointment, seemed the only remedy at our disposal; this was accordingly resorted to; but the attempt to administer hydriodate of potash dissolved in decoction of bark was made, and succeeded better than I anticipated. For two days he appeared to hold his ground, and even to improve slightly: he was able to swallow better; his respiration became less frequent by three or four inspirations in the minute, and his aspect improved. On the third day, however, an evident change for the worse had taken place; the pulse rose to 132, and became much weaker, while the power of deglutition failed: the next day he was dead. The dissection revealed a single cavity, capable of holding two or three large walnuts in the middle lobe of the right lung, deeply seated, and partially filled with matter, having an odour exactly resembling gangrene, or the most abominable fœces. Anteriorly, the side of the lung next the mediastinum, was compressed and separated from the ribs by a quantity of citron-coloured serum (about a pint and a-half), and posteriorly, the two lower lobes were of a greyish-white colour, hard to the feel, and perfectly solid. Semi-organised lymph, evidently of recent formation, occupied the lateral and posterior surface of the pleura, while the anterior was free from it. It is hardly necessary for me to say that these appearances exactly coincided with the physical signs during life.

Let me now say a word or two upon the rarity of this affection. Formerly, when post-mortem examinations were made with little care, compared to what the present state

of pathology requires, it was generally believed that abscess of the lungs was a common enough occurrence. But this arose from several different appearances being confounded together: gangrenous destruction of the part; accumulation of purulent matter in a dilated tube; lobular abscesses consequent upon phlebitis; cavities filled with softened tubercles, and mechanical injuries of the lung inadvertently made during the examination, all passed for the affection in question. In the present day they are carefully distinguished.

Three circumstances concur in accounting for the rarity of this lesion. These are, the small quantity of cellular tissue in the lungs; the multitude of air-cells, with their atmospheric communications, that occupy their parenchyma; and the rapidity with which purulent matter is there formed. The first of these, by its density and delicacy, is evidently less fitted to become the nidus of an abscess than it is elsewhere; and the same reasoning explains the fact that when abscesses do occur, they are almost always found near the root of the lung, where the cellular tissue is looser and more abundant. Simon mentions this circumstance, and the case under consideration confirms the remark. As to the second, Dr. Stokes has laid it down in his lectures, that in all glandular organs the liability to form abscesses bears an inverse ratio to the number and size of the excretory ducts. Now the lungs, notwithstanding the apparent difference in their structure from other glands, must certainly be considered as a vast glandular apparatus, having the bronchial tubes for their excretory ducts, and as these are incomparably larger in proportion than those of any other organ in the body, it stands to reason that if this law be correct, abscess should be less frequent in the lungs than in any other gland of the body; and that the law is real

is proved, not merely by experience, but also by sound reasoning, because the accumulation of matter that is necessary to form an abscess must vary inversely with the facility of removing the pus as it is formed.

But probably the rapidity with which the suppurating process is accomplished in the lungs is the most important circumstance in effecting this result. Before an abscess can be formed, disorganization of the textures must take place, and for this purpose it is necessary that a considerable interval of time should elapse from the commencement of the attack. But in the lungs, from the large supply of blood, the elevated temperature, and the exposure to external air, all of which it is now known materially expedite the process, the change of secretion takes place more rapidly than elsewhere, and in consequence materially interferes with the production of a defined and regular abscess.

LECTURE VIII.

DOUBLE PLEUROPNEUMONIA, LATENT—PRINCIPAL VARIETIES OF PNEUMONIA—REGULAR, TYPHOID AND LATENT—THEIR DISTINCTIVE FEATURES CONTRASTED.

GENTLEMEN,—At our last meeting I was engaged in calling your attention to the extreme rarity of pulmonary abscess, and its proper diagnosis from other affections; this morning I purpose making a few observations upon pneumonia generally, and especially upon that form of the disease in which the ordinary symptoms are either entirely absent, or so badly marked, as to escape observation; and in doing so, I shall illustrate my remarks by a reference to the case of Johnston, who was admitted on the 31st of December, 1847. This young man, I understand from Mr. Ogle's statement, was once in a very respectable position in society, having been apprentice to an attorney, but owing to his dissipated habits, was reduced to a state of the utmost destitution, in which condition he was found in a cellar in Marlborough-street. He was admitted into hospital, at Mr. Ogle's request, for the benevolent purpose of sheltering him from destitution, rather than from a conviction of his being seriously ill; and the circumstance of a trifling degree of pyrexia appearing upon him was laid hold of as a pretext for affording him the benefits of the institution, under the ambiguous title of "Influenza." I mention this to show you how little the ordinary symptoms of pulmonary inflammation manifested themselves in his case,

and how easily a person might be misled by a superficial view of his case.

When I came to examine him, I found he was thirty years of age; that he had led an irregular and intemperate life; and that his present illness commenced by an attack of diarrhœa three weeks previous to his admission. At that time he had a slight cough, which soon left him, but no expectoration. On admission, he stated he had no cough, dyspnœa, nor expectoration; his breathing was only 16 in a minute, and the pulse but 76; his skin cool; his tongue covered with a brownish fur in the centre, but clean at the edges; he had thirst and loss of appetite; the bowels were regular. So far, there was nothing to indicate anything seriously the matter with him; still less to lead a person to think he could be suffering from any acute inflammation of the lungs: but on questioning him more closely, I found that he suffered from pain in his right side when lying on it, and that on drawing a full inspiration, he felt a dragging sensation in the part, as if there was something there catching him. A physical examination revealed extensive dulness on this side below the mamma, becoming perfectly femoral towards the base; complete absence of all respiratory murmur in the dull part, with very obscure crepitus under the right scapula; loss of vocal reverberation to the applied hand, and a sound of frottement in the anterior and lateral portions of the dull part. On the left side, also, there was dulness extending a good way up the back, and for about an inch anteriorly. Respiration was feeble, and destitute of râle in the dull parts of this lung, while in the remaining portions it was perfectly normal.

℞ Pil. hydrarg. gr. iij.
Pulv. ipecac., gr. ½.
Pulv. opii, gr. ¼. Ft. pil. 3tiis horis sing. s.

The next day (January 1, 1848), his countenance, when he attempted to stir in bed, was expressive of great pain from a soreness he experienced about the left knee, though no external redness or swelling could be detected. He complained, also, of an acute stitch in the left side, which was extremely tender to the touch. Respiration, though still completely suppressed at the base of both lungs, was rather more audible above than on the 31st; vocal reverberation altogether destroyed in the base of both lungs; respiration still 16; pulse 80; sordes on the teeth and mouth; thirst continues.

Adhibeantur cucurb. c. inter scapulas.
Infricet. ung. hydr. ʒss. bis die.
Cont. pilulæ.

January 3rd. Pulse 76; could move with less distress to himself; felt no pain in the left knee, but complained of some in two fingers of the right hand; amount of respiration increasing in the right lung, especially in front; some vocal reverberation at base of that lung behind; no crepitus audible.

Continuent. omnia.

4th. Dulness diminished somewhat in base of right lung anteriorly and posteriorly; respiration increased in amount, but of a bronchial character; pulse 72; no crepitus; mouth beginning to be affected.

Mistura cinch. c. soda.
Gargarisma.
Cont. cætera.

6th. Considerably improved; dulness continues to diminish; respiration still scarcely perceptible at base of left lung behind; bronchophony audible there, but no vocal

reverberation could be felt; no frottement; intercostal spaces on both sides more distinct; respiration very audible below right mamma, where it was previously inaudible; appetite improved.

Cont. omnia.

11th. Mouth affected some days; the mercurial frictions were omitted on the 8th, and a blister applied on the left side; at that time scarcely any dulness remained on the right side, and the respiration was full and nearly pure.

Medical writers, in treating of pneumonia, recognize a number of varieties, some of greater, some of less importance in a practical point of view; but all of which it is necessary you should be acquainted with. They may be divided into two great classes, according as the distinctions are drawn from anatomical appearances after death, or the symptoms observed during life. In the first of these must be placed the vesicular, lobular, lobar, and hypostatic varieties; in the second, the regular, typhoid, and latent. At present, I intend to occupy our time principally with the last three of these, as bearing more immediately upon the case under consideration. First, then, of regular pneumonia. This occurs usually in the young and vigorous, whose constitutions have been unimpaired by previous excesses, and who are liable to all the exciting causes of ordinary inflammation. It is characterised by high fever, dyspnœa proportional to the extent of lung actually implicated, pain in the chest, a peculiar cough, and occasionally at least the specific expectoration of pneumonia. These symptoms, from their marked character, can scarcely fail to direct attention to the respiratory organs, and to lead to a careful examination. Anatomically, the disease has been

divided into three stages: in the first, or that of engorgement, the lung is distended in volume, and does not collapse on opening the thorax, as a healthy lung ought to do: its density is increased, though it may not absolutely sink in water: it is mottled externally, of a brown red colour and dingy aspect: it pits upon pressure, is not so tough and elastic as usual, nor does it crepitate freely between the fingers. On making an incision in the part, a quantity of frothy and sanguineous fluid exudes: the cellular structure is indistinct, and the bronchial ramifications of a brownish red colour, with rusty-looking fluid in them. The appearances now described are often confounded with mere congestions of the lung, the result of a mechanical gravitation of the blood from position during a period of impaired vital energy, and altogether unconnected with real inflammation. The question is important, and sometimes difficult of solution. Gendrin tells us that if a small stream of water be let fall continuously upon the part for some time, all the appearances now described, including the colour, may be made to disappear if they depend upon congestion solely, and the lung will resume the ordinary characters of health; whereas if they depend upon inflammation, the colour cannot be entirely removed, especially from the central portions, though the other alterations in density, permeability to air, and sensible properties may.

A nice point connected with the minute pathology of the disease is, to determine the exact seat of the inflammation. The common opinion entertained by the profession has been that it is the parenchyma of the lungs that is essentially involved in pneumonia: and that the difference in the primary seat of the inflammation constitutes the real difference between it and bronchitis. A few modern writers, on the other hand, have maintained that instead of its

being a distinct disease, it is really nothing more than a bronchitis affecting the terminal tubes and air-cells. The mucous membrane in these last, they say, from its extreme delicacy, resembles the ordinary class of serous membranes, and resulting inflammation consequently assumes the character that naturally belongs to such membranes in preference to that which is peculiarly its own.

M. Gendrin, with his usual ability, has endeavoured to determine this point by direct experiment, and the result of his investigations is to confirm the common opinion, that these diseases are really distinct. He injected coloured fluids into the pulmonary artery, and invariably found them to pass readily into the minutest ramifications when pneumonia was not present, but never could succeed in making them enter the vascular network of the cells when it was. You are all probably aware that the lungs are furnished with a double set of vessels. The bronchial, derived from the thoracic aorta, and designed for the nutrition of the gland; and the pulmonary, from the pulmonary artery, which subserve the proper function of respiration. Now, it is not an irrational idea to suppose that in bronchitis the former set of vessels is principally concerned; and in pneumonia, the latter: and hence the difference between these two affections. Assuming this opinion to be correct, it explains a point of practical experience which has been long known as to the relative value of different kinds of bleeding in the two diseases. In bronchitis, local bleeding, by leeches or the cupping-glass near the root of the lungs, has been found more efficient than the lancet; while in pneumonia it is just the reverse. Of course, I speak merely of the *general* result without regarding those special circumstances which always modify our statements. Now, if the theory which I have advanced be correct, the local abstrac-

tion of blood will relieve the gorged and inflamed bronchial vessels in their neighbourhood more directly than a general bleeding could do; while the lancet, from its effects upon the system at large, must be more suitable to those cases in which the branches of the pulmonary artery happen to be engaged.

But the change that constitutes the first stage of pneumonia, consists not merely in an increase in the quantity of blood distributed to the pulmonary capillaries, it is attended also with a diminished velocity in the current, and with a change in its chemical constitution. The colouring matter of the globulin is more or less dissolved in the serum, transudation by the exosmosis through the vascular tunics takes place, and a rusty-looking secretion accumulates in the minute bronchial tubes. This is the specific expectoration of pneumonia, indicating the existence of the inflammation as often as it is observed, though its absence is no proof of the reverse. Under all circumstances, its appearance is limited to a very short period, because as soon as the second stage becomes established, transudation through the hepatised lung is no longer possible, and all secretion is arrested. In making rusty expectoration a symptom pathognomonic of pneumonia, it is necessary to distinguish it carefully from hœmoptoe, with which a careless observer might confound it. In hœmoptoe, an evident rupture of the vascular tissue has taken place, and we find globules more or less injured, indeed, but still preserving sufficiently their original appearance mixed up with the mucus of the tubes; but in the specific expectoration of pneumonia scarcely a trace of globules can be detected, while the colouring matter of the blood, loosened and dissolved, is blended in intimate union with the secretion of the cells.

In the second stage, the lung is found dilated to its utmost extent; its specific gravity is increased so as to sink completely in water, while it is more solid to the touch, and destitute of the crepitating feel that even in the first is still perceptible. It is of a lightish brown red colour, and somewhat softened, so as to break easily under the pressure of the fingers. If an incision be made into it, the cut surface presents a number of flat granulations, which vary in size according to the age of the patient, being smaller in the very young than in the old; and still larger in persons who have suffered from emphysema. These are the obliterated air-cells. Of the original structure of the lung, nothing but the larger bronchial tubes is observable: the gorged capillaries having effused their contents—decoloured globulin, serum, and fibrin—into all the interspaces: while the decomposed blood within the cells is converted into a coagulated mass of very slender consistency. The time which may elapse before this stage is fully formed varies in different cases; but, as a general rule, the younger the subject, and the more vigorous the state of health, the shorter the interval. Two or three days, under ordinary circumstances, are generally sufficient for the purpose.

In the third stage, the density, volume, and want of crepitation under pressure, continue as they were in the second, while the softening is more advanced. Disorganization of the lung, however, does not take place, as careful washing, prolonged for a sufficient time, is capable of restoring the cellular texture to its original state. The colour becomes of a dirty gray or a lightish yellow. A section exhibits the same granular appearance as the second stage, while a yellowish fluid exudes spontaneously from the surface, or is easily forced out by gentle pressure. Mere

exposure to the air will liquefy the coagulated mass that fills the parenchyma of the lung. The time necessary for the production of this stage is even more uncertain than that for the second; occasionally five or six days are sufficient, while at other times weeks may elapse before it occurs. The important point as to the pathology of the disease for you to bear in mind is, that the lymph and fibrine are effused in a fluid state, constituting the first stage; that they coagulate subsequently to form the second; and that they again liquefy to form the third.

Now, in regular pneumonia, each of these stages follows in their exact order: the disease begins below, and gradually travels upwards; it occupies the whole of one lobe before it extends to another, however close the connexion may be. In very young children an exception occasionally occurs, because the membranous septa which divide the pulmonary lobules are relatively denser than in the adult, and hence a separation is more easily effected. From this circumstance the disease in them often assumes the lobular variety. The lungs, in fact, appear to present, in infants, some analogy to the kidney, which you know has a lobulated structure at first, that disappears as the child grows up.

There are several other circumstances connected with this subject, into which I do not now enter, as I wish to pass on to the contrast between the regular and irregular varieties of the disease. Each of the three stages has its appropriate physical signs, on which I do not intend to dwell: these are, in the first, diminished amount of respiration; fine crepitating râle; slight dulness on percussion; diminished reverberation of voice to the applied hand; increased vocal resonance. In the second, bronchial respiration and bronchophony. In the third, large muco-

crepitus, or crepitus redux, augmented respiration, and diminished dulness. Now, if the physical alterations in the lung, which are the cause of these phenomena, commence below, and gradually proceed upwards till they involve the whole lung, it is obvious that the physical signs themselves must follow a similar course: hence we have three well-marked characteristics of the regular form of the disease. First, symptoms referable to the respiratory organs distinct and well marked; second, regular progression of the stages; and third, the physical phenomena beginning below, and gradually ascending upwards. Instances of this form of the disease you have had in the sailor, whose name I forget; in Mrs. Davis, where it seemed to spread by contiguity of position from an inflamed stomach, and in James Long, the subject of a former lecture.

The two principal varieties of irregular pneumonia are, the typhoid and the latent. Of the former we have happily had no example during the present session, but it differs essentially from that which I have been describing. The best account of it you will find in Dr. Stokes' elaborate work upon "Diseases of the Chest." You are not to suppose that the mere occurrence of typhoid symptoms is sufficient to constitute the affection, for you will often observe pneumonia developed in the course of typhus fever, but presenting in every respect, except the occurrence of adynamia, the regular character. Its essential features are, the rapidity of its course, the badly-marked gradation of stages, the almost total suppression of initiatory crepitus. The manner in which the whole lung seems to become solid at once, the early period at which suppuration occurs, the slowness with which resolution is accomplished, and the absence of crepitus redux in the third

stage, are features as remarkable in themselves as they are peculiar to this form of the disease. It is extremely fatal, but its rarity corresponds to its severity. A few weeks after the workhouse was opened, I met with a case which terminated fatally about the third day after her admission, and on inspection the whole lung formed one mass of suppuration, uniform in extent in all the lobes, and not, as in the ordinary form, more advanced in the lower than in the upper.

Another point of difference consists in the typhoid form being almost always limited to a single lung, whereas regular pneumonia seldom attacks the whole of one lung, without, at the same time, involving the other more or less. If to these remarkable features you add the striking fact, that the prominent symptoms of pulmonary disease are often absent or obscure, you have a collection of distinctive marks, sufficient to justify the most fastidious in considering it a separate species. I do not at present speak of the treatment suitable to typhoid pneumonia farther than to say, that it must differ essentially from that in use in the ordinary form. All antiphlogistic measures, except mercury, and that administered in the mildest but most effectual manner possible, must be laid aside, and the patient's strength supported by tonics, nutritious diet, and wine, according as circumstances will admit.

The latent form, like the typhoid, differs from the regular, in not observing the usual law of progression in the stages from below upwards. Sometimes you will find a very small portion of the chest in the second stage, and that not at the base of the lung; but it may be in the middle lobe, and the closest examination elsewhere will fail to detect in the surrounding parts the slightest crepitus, as indicative of the first stage. The principal feature, how-

ever, is the complete suppression of the usual symptoms of pulmonary disease: there will be no cough, no local pain, no difficulty of breathing, no expectoration. A physical examination alone reveals the existence of anything wrong with the respiratory organs. In typhoid pneumonia, it is true, you may have the same thing, but it is not invariable, and even when it does exist, it is scarcely matter of surprise. The state of stupor in which the patient is sunk, as well as the complete prostration of all the vital powers, so deaden his susceptibility to impressions both internal and external, that we can readily expect these symptoms should be very obscure, if they exist at all. The case is different under the circumstances we are now considering. In them no reason exists why these ordinary symptoms should not be manifest. Latent pneumonia is apt to occur under two very different conditions, according as fever is present at the time or not. In the former, as in children suffering from the exanthemata, the pyrexia that is present, as well as the slight hurry of the breathing, are apt to be set down to the prominent disease, and so the deeper-seated but latent one may escape unnoticed. The same thing frequently occurs in delirium tremens; the attention of the physician is extremely liable to be directed exclusively to the state of the nervous system, yet it frequently happens that the inflammatory action, commencing in the mucous membrane of the stomach, creeps insidiously upward till a considerable portion of the right lung becomes solidified. What increases the difficulty in this case is, that the patient is generally incapable of expressing his feelings, so as to point attention to this dangerous complication.

But there is one class of cases to which I wish particularly to direct your thoughts, because I do not think it is

sufficiently well known, although I can testify from an extensive observation that it is common enough; and that is the frequent occurrence of latent pneumonia in connexion with acute hydrocephalus, and the convulsive affections of children. In this, as in the last instance, the *manifest* appearances are so alarming as to divert all attention from other topics, while in reality the former are essentially caused by the obstruction to the free circulation in the chest. On a multitude of occasions have I noticed this complication in the workhouse, where the two diseases were, unfortunately, extremely common. But I cannot forbear mentioning the following example, which occurred in the north of Ireland. Happening to be staying for a few days at a friend's house, I was asked to see a little child about a year and a-half old, who was said to be ill of water on the brain. The father had lost several other children by this complaint, and was naturally very uneasy at the thought of losing this. On arriving at the place, I found all the ordinary symptoms of hydrocephalus well marked; but, at the same time, discovered it to be labouring under extensive pneumonia of both lungs: treatment directed to this had the happy effect of completely removing all the unpleasant symptoms under which it laboured.

But the same thing may exist when there is no fever present, or as little as in our patient Johnston, where the pulse was 76, the breathing 16, and the skin cool. I have met with an instance in a very little girl, about four years old, who was observed, a few days after a slight feverish attack, to have a trifling cough. She was to all appearance perfectly well, free from fever, and in the best possible spirits. On examining her chest, there was one small spot, about as large, perhaps, as a hen-egg, where percussion

gave a dull sound, and respiration was nearly inaudible. No crepitus could be detected. By appropriate treatment resolution took place, and she recovered perfectly. Several other cases came under my observation in the workhouse; among the rest, a healthy woman of the name of Lacey, about 30 or 35 years of age, a deputy in one of the hospital wards, complained of a pain in the left side. She had no fever, no quickness of breathing, no cough, nor expectoration. On examining her chest, I detected dulness over a considerable portion of the anterior part of the lower lobe, which was somewhat tender to the touch. Respiration in the part weak and bronchial; vocal resonance increased. Appropriate treatment here too, completely removed the disease.

The occurrence of inflammation in this low form, unattended by fever, hurry of the breathing, &c., altogether contradicts the opinion commonly entertained in the medical world, and imposes on us the greater necessity for physical examination in all doubtful cases. In percussion and the stethoscope, in our hands and ears, we have means of procuring information that eludes the grasp of the other senses, and it ought to be a disgrace to any member of the profession, in these enlightened days, to allow a single case of this kind to pass undetected. But the bare fact that pulmonary inflammation may assume a low unhealthy form, is only analogous to what we know occurs elsewhere. Hasse, in his "Pathological Anatomy," makes an observation that the case of Johnston seems to bear out; that is, that in persons habituated to the use of alcholic stimulants, the respiration is habitually slower than in other persons, and that in delirium tremens especially, this diminution in the frequency of inspiration is most remarkable. In this hospital, where cases of delirium tremens occur so often,

you cannot want for opportunities of testing the correctness of this opinion.

In all cases of latent pneumonia, I am in the habit of resorting to mercury, in doses proportional to the urgency of the symptoms. Tartar emetic appears to me, much as it is lauded in ordinary pneumonia, to be unsuitable, both because the remedy is too heroic for the low kind of inflammation we have to deal with, and also because the first stage — that to which tartar emetic is peculiarly adapted—in these cases has passed away before we have an opportunity of recognizing the disease. This together with local depletion repeated from day to day, as the strength admits, are, perhaps, the most important means we possess of combating this obscure and insidious affection.

LECTURE IX.

PLEURITIS WITH EFFUSION—DISPLACEMENT OF THE HEART.

GENTLEMEN,—We have been lately discussing the interesting subject of pneumonia in some of its rarer varieties. I have the opportunity this morning of directing your attention to another of the acute inflammations that attack the organs of respiration, in the instance of Bridget Conolly, ætat 22, who has been in the hospital for the last two or three weeks. Her disease is pleuritis of the right side, with effusion leading to displacement of the liver and heart. Her history is simply this: She was dismissed convalescent from the Kilmainham Fever Sheds about the commencement of the present month (January 1848), and having, like too many of the unfortunate inmates of that charity, no friends or shelter to repair to, she slept for two nights in the open field, and got cold. On the 9th she felt herself ill, with a soreness in the pit of her stomach, which was productive of extreme pain in swallowing: since then she felt a tightness in her chest. Two days subsequently she got a rigor, and on the 13th she began to cough.

She was admitted on the 19th inst., and her symptoms then were as follows:—Extreme dyspnœa; lips livid; respiration never less than 24 in the minute, but frequently as many as 32. She lay on her right side, and was unable to change to the left from increase of pain and difficulty of breathing. She complained of an acute stitch in the right chest about the margin of the ribs, which was tender to

the touch. Dulness strongly marked over nearly the whole of the posterior aspect of the right lung, as well as over the lower part of the anterior portion. No respiration was audible over the lower portion of that lung anteriorly or posteriorly. About the root of it on the back, bronchial respiration could be heard; above, it was healthy; anteriorly it was mixed with sonorous and sibilous râles. No enlargement of the right thorax could be detected by measurement; but the intercostal spaces were indistinct, as contrasted with those on the left. No vocal resonance or reverberation existed over the dull portions. Percussion over the left lung was healthy. Sonorous and sibilous râles everywhere supplanted the natural murmur. Her cough was frequent and troublesome, but soft; her pulse 80, and small; bowels regular; appetite tolerable; no thirst.

To be cupped over right thorax.
℞ Hyd. c. creta, gr. iij.
Pulv. Doveri, gr. i. Ft. pil. 3tiis horis sing. sum.
Mist. pector. c. soda.

January 20th. Respiration 28; pulse 108; did not feel better; lips still livid; dulness more extensive on right side, particularly up towards the axilla. Sibilous râles audible to the base of the right lung posteriorly, but no healthy respiration anteriorly under the mamma; it was somewhat bronchial; œgophony could be heard there; percussion in that situation caused pain; the heart was feebly heard pulsating to the left of the left mamma, and elevated above its natural position; the sounds were rougher than usual; she complained of palpitation; liver detruded into the abdomen.

To be leeched on right side.
Cont. pilulæ.
Infricet. ung. hydr. ℈i. bis in die.
M. polygalæ c. ammonia.

22nd. Was blistered on the 21st; pulse 92, rather jerking; respiration 32; heart beating plainly to the left of the mammary gland, and far to the left of the nipple. It was about five inches to the left of the sternum, and considerably higher towards the clavicle than natural. The right thorax, on being measured, was found to be one inch larger than the left. The intercostal spaces could be felt with the finger, but were not visible as on the other side. No reverberation of voice could be detected.

Cont. omnia.

23rd. Considerably relieved.

Pergat in omnibus.

24th. Pulse 108; respiration 32; complained much of weakness; heart beating more immediately *below* the mammary gland, almost directly below the nipple. Respiratory murmur freer in front, but still accompanied with sonorous and sibilous râles; liver less prominent in abdomen; mouth unaffected.

Vini ℥iv.; beef-tea; cont. cæt.

25th. Respiration 34; situation of heart same as day before; dulness diminished at upper and anterior part of right lung, but quite femoral round the base; œgophony and bronchial respiration of a silvery character all round the base.

℞ Calom. gr. ij.
Ipecac. gr. i.
Opii, gr. ½. Ft. pil. 2ndis horis sing. sum.
Cont. frictio et cæt.

27th. Mouth affected; breathing tolerably easy; respi-

ration 28; pulse 114; still unable to lie on the left side; heart evidently returning to its natural situation; great dulness all over the right chest; œgophony above the right mamma; bronchial respiration, and an approach to œgophony on the back near the root of the lung; puerile respiration, but accompanied with sibilant râles all through the left lung. The right chest by measure was about half an inch larger than the left. Less tenderness in the liver, but the fulness of the hypochondrium continued.

Sumat. pil. i. bis die.
Mist. cinch. c. hydriod. potas.
Gargarisma.

This morning (January 28), her condition is very much the same as yesterday. The heart's impulse is now only about two inches and a-half to the left of the sternum, though it is still rather higher than usual. The respiratory murmur is evidently becoming fuller, while the evidences of effusion are diminishing.

Gentlemen, the case which I have just detailed, and which you have watched with so much interest since her admission, is an instance of rather a rare combination of bronchitis and pleuritis. Bronchitis and pneumonia; pneumonia and pleuritis: bronchitis, pneumonia, and pleuritis, are all common enough combinations of disease; but it is seldom you have an opportunity of observing the membranes of the lungs simultaneously inflamed without the parenchyma being affected at the same time. This fact is easily accounted for on the principle of contiguity of situation; perhaps the very peculiar circumstances in which the present case originated may explain the unusual exception. In her there was the direct application of damp to the chest externally when lying on the ground, while the cold of the night air induced an attack of bronchitis.

But you will probably ask: How am I justified in saying that we had not pneumonia present, as well as pleuritis, in this instance,—dulness on percussion, and deficiency of respiration being common to both? First, then, we had neither crepitating râle nor rusty expectoration; and although these signs are limited to the first stage of the disease, and therefore their absence cannot be considered conclusive evidence against its existence in a more advanced degree, yet in a case like this, where the inflammation continued evidently advancing after her admission, their absence becomes a tolerably conclusive proof as to the point. Secondly, bronchial respiration, though present, was limited exclusively to the root of the lung where the larger bronchi are seated, and where this sound is at all times audible. The softness and freeness of her cough was another argument in favour of the same view. I have mentioned in a previous lecture that a different kind of cough attends the various affections of the chest, and that the cough of bronchitis is soft, full, and relieved by the effort of expectoration; while that of pneumonia is hard, restricted, and but little relieved by expectoration. In the case of Conolly, her cough was evidently of the former, and not of the latter description. But here another objection may be raised. If her cough were full and soft as described, how could she be suffering from pleuritis—a disease in which it is short and suppressed? In the *first* stage of pleuritis, before effusion has occurred, the cough is indeed short and suppressed, because the succussion of the chest which attends the act of coughing, rubs the two laminæ of the pleura together, and produces acute pain; but at a later period, when liquid has been poured out, and separated these surfaces from each other, no such effect is produced, and the patient is enabled to cough with comparative ease. But the strongest

argument against the existence of pneumonia in this case is derived from the enlargement of the thorax and the displacement of the adjoining viscera. In pleuritis such a result can be produced only by a copious effusion of fluid—an idea altogether inconsistent with the idea of solidification of the lungs, because the latter by the mere pressure that it exerts mechanically must necessarily interfere with any great amount of effusion taking place.

Of the existence of pleuritis we had the plainest and most convincing proofs. The stitch in her side, though not necessarily proving its existence, is a symptom that should always excite our suspicions whenever it is met with. In hysteria and pleurodynia, it is true, that it is frequently complained of, and in addition to the pain, a physical examination of the part is occasionally attended with circumstances calculated to throw some obscurity upon the case: an instinctive but unconscious effort on the part of the patient, causing the ribs to be approximated, gives a slight but sensible degree of dulness to the attempt to percuss; while the respiration, for the same reason, is locally suspended, so that a person not acquainted with the cause might fall into error, and resort to bleeding, leeching, &c., a course of treatment highly injurious to a purely nervous affection. This deceptive appearance I have observed on several occasions in patients in the workhouse. A little management, however, in conducting the examination will avoid the source of fallacy: the patient is to be handled with the greatest gentleness; all sudden and violent motions are to be avoided, and in listening to the respiration, she is to be directed to breathe slowly and regularly: this course of proceeding will remove the spasmodic state upon which the whole depends. In addition, the observer can scarcely fail to remark the absence of all the ordinary symp-

toms of inflammation, while the copious but limpid urine of hysteria affords a striking contrast to the scanty and high-coloured secretion of pleuritis.

The pain of pleuritis differs from that of pneumonia and bronchitis both in situation and kind. In bronchitis, the pain is complained of at the top or middle of the sternum, and immediately behind that bone; occasionally, but rarely, patients refer it to the back, near the root of the lung. This arises from that law of mucous membranes which refers impressions arising throughout any part of their extent to the nearest orifice; the sensation itself is rather a soreness or feeling of heat than of actual pain. Pneumonia, like what occurs in the inflammation of other glandular organs, is frequently unattended with pain of any kind: when it is, it is usually deep-seated in the chest, and of a dull, aching description. The pain of pleuritis is preëminently acute and superficial: its usual situation is the anterior and lateral parts of the chest, where the motion of the ribs is most frequent and extensive. Actual pain ceases to be felt whenever effusion occurs, for the obvious reason, that the inflamed surface is then no longer irritated by friction in breathing; but tenderness or percussion, as instanced in the case before us, will continue notwithstanding.

Dulness on percussion is the next sign we have to consider: this was entirely confined to the right side of the chest—an important point, as determining the presence or absence of pneumonia, which is very seldom confined to one lung, while pleuritis very rarely extends to both. It was also much deeper in sound than is usual in pneumonia: this arises from the circumstance that the lung, even when fully hepatised, continues to contain a considerable quantity of air, from the larger tubes never being obliterated, while the resiliency of the parietes (upon which the per-

cussion sound greatly depends), though somewhat impaired, is not entirely destroyed. An accumulation of fluid, on the contrary, produces both these effects in the highest possible degree, and hence it may be taken as a general rule, that when the dulness is intense, the disease is pleuritis rather than pneumonia.

The *extent* of surface over which this dulness reached, further corroborates this opinion. It occupied nearly the whole of the posterior and three-fourths of the anterior aspect of the lung, while various râles indicating the permeability of the smaller twigs, could be heard over the entire. Now, if the dulness were due to pneumonia, solidification must have taken place, and these râles could not possibly have been heard, whereas a thin deposit of semi-fluid lymph upon the surface would have been quite sufficient to produce all the dulness without interfering with the bronchitic râles.

Obliteration of the intercostal spaces is a sign only occasionally met with in pleuritis, and still more rarely at such an early period as occurred in Conolly's case. Its appearance, in fact, is almost a proof that the disease has passed into the chronic stage, and assumed the character of empyema. For a long time it was referred entirely to the operation of mechanical causes; the pressure of the fluid on the intercostal muscles gradually overcoming their vital power of resistance. This pressure, depending upon the amount of the effusion, was supposed to go on increasing with the increasing quantity of fluid, and hence the giving way took place in the late rather than the early stage. This theory, however, has been rejected by Dr. Stokes, who has shown that an equal or even greater amount of pressure is often exerted in other diseases, emphysema for example, and yet obliteration of these spaces does not fol-

low, and *vice versâ,* that the sign is observed in cases of pleuritis, where it is irrational to suppose that the pressure can be considerable. In emphysema, the internal pressure is often sufficient to dislocate the heart and liver, and to produce enlargement of the thorax, yet the intercostal spaces never lose their distinctness. In the case of Conolly, the phenomenon was observed at a time when measurement of the chest showed that no enlargement had occurred, and before the heart and liver were materially removed from their natural position; hence it is reasonable to infer that the pressure could not have been very great. Indeed, when we compare the anatomical relations of the intercostal muscles with the diaphragm, and still more with the mediastinum, we shall see that the former are infinitely better calculated to resist pressure than the latter; the former consist of short and transverse fibres, and are besides arranged in a double layer; while the diaphragm, from the extent of space over which it is stretched, and the mediastinum, from the yielding materials of which it is composed, are little able to resist pressure, especially if long continued; and, in point of fact, these last invariably yield before the former when pressure alone is the producing cause of the displacement.

To what, then, is the yielding, and especially the early yielding of the intercostal muscles to be attributed? Dr. Stokes refers it to a paralysis of the fibres, the consequence of previous inflammation, and hence an amount of pressure which they would have effectually resisted in health becomes too much for them when weakened by disease. In emphysema, as no inflammation affects them, the paralysis does not occur, and hence the sign is never observed, but the very condition of pleuritis implies a degree of irritation that is likely to lead to it. Intensity of inflammation ap-

pears to be more effectual to its production than the mere length of time, so that we find it in some instances occuring early, and in others, as in that of Doran, that you had an opportunity of observing lately, it may not take place at all. Abercrombie, in his work on the Digestive Organs, mentions a fact that seems to confirm this view of the matter. When a case of ileus proves fatal, a part of the intestines is generally found after death in a state of contraction, and a part in a state of relaxation : it is the latter, and not the former, is the seat of the inflammation, and it is there only that the products of inflammation can be found.

Let me now call your attention to the enlargement of the thorax. This, as you may remember, did not exist at the period of her admission, but three days afterwards the right side measured fully an inch more in circumference than the left, while yesterday it had again sunk so as to exceed it by no more than half an inch. This depended upon the accumulation of fluid within the chest, and upon its absorption afterwards. The mere fact, however, of one side being larger than another, is no proof that disease is present. Statistical records of the measurement of healthy and well-formed individuals, have established this beyond a question. But this excess, when natural, never exceeds the maximum of half an inch, and seems to depend upon that law of development, which causes all the organs on the right side of the body, to which it is invariably confined, to attain a greater size than those of the left. In Conolly's case, no doubt as to its nature could exist, the previous measurement having proved its absence on her admission. Enlargement of the thorax depending upon effusion, often occurs at a very early period. Stokes has noticed it within the first week,

Andral within four days, and other observers even as early as the second day. The difficulty of determining how long Conolly was ill previous to our seeing her, prevents my saying positively how soon it took place in her, but it was very manifest on the 22d, which was the third day after her admission. Considered by itself, it is not an unfavourable sign, but rather the reverse, because as effusion cannot occur without room being made for the reception of the fluid, either the lung must be compressed for the purpose, or the capacity of the thorax enlarged by the yielding of the parietes. The former is attended with distress to the patient and dyspnœa; it is also more dangerous than the latter, because ultimate recovery depends in a very great measure upon the lung retaining its resiliency, so as to be able, when absorption takes place, to resume its original dimensions. All of these inconveniences are in a degree prevented by the early yielding of the walls. Perhaps the coëxistence of bronchitis in Conolly's case may have tended to prevent compression of the lung, and so have determined the earlier development of thoracic enlargement.

The displacement of the heart and liver may very properly be considered in connexion with this subject. Like it, they depended upon the existence of internal pressure; and like it, they have begun to disappear when the fluid seems to be undergoing absorption. In the case of the heart, the change of position was most striking. My attention was first attracted to it the day after her admission, when examining the cardiac sounds, which were rather more rough than usual, a circumstance that led me to fear the possible supervention of pericarditis. The similarity of structure between the pericardium and pleura leads to the frequent extension of inflammation from one

to the other, and it is surprising how often you will have the pericardium attacked across the mediastinum from the right pleura. Here are drawings of three cases of pericarditis, originating in the spread of inflammation from the pleura, taken from individuals who died in the workhouse, and in two of these it was the right pleura which was implicated, and in one only it was the left.

To return: my attention having been thus drawn to the heart, I made daily observations of its state, which showed very plainly that the dreaded evil of pericarditis did not occur, but which, at the same time, led me to notice its gradual departure from its normal position, till the apex could be felt beating to the left of the mammary gland, and on the same level with the nipple. This phenomenon is in appearance a more serious matter than it proves in reality. It is productive of no inconvenience to the patient, who is often unconscious of its occurrence, till the physician points it out to his attention, and when the pressure is removed, it is astonishing with what rapidity it returns to its natural place. Displacement of the heart may be produced equally by an effusion into the right or into the left thorax; but it is more commonly noticed as a consequence of the latter, perhaps because, as it beats naturally on the left of the sternum, slight changes of position upon that side are less obvious than on the other, and perhaps, also, as the capacity of the right thorax is naturally greater than the left, a larger quantity of fluid is requisite to effect the displacement on that side than on the other.

As to the liver, there seems good reason to believe that it is not only displaced, but somewhat enlarged also. Hepatic congestion being the common consequence of any impediment to the free circulation through the chest, the

tenderness which Conolly experienced in the right hypochondrium was probably due to this cause. It is needless for me to remark that emphysema of the chest and pneumo-thorax are equally capable (with pleuritic effusion) to cause displacement of these viscera, but that the simple act of percussion will be sufficient to distinguish them—dulness being invariably present in pleuritis, while in the other two affections the resonance is actually increased. In the combination of these three signs—enlargement of one side, dulness on percussion, and displacement of the adjacent viscera *from* the affected lung, we have an unerring proof of the occurrence of effusion: in fact, no other pathological condition is capable of accounting for their development. In a cured pleuritis, it is true, we have frequently displacement of the heart and liver, dulness on percussion, and difference in the relative size of the lungs; but then the dulness covers the *contracted*, and not the large lung, and the displacement is *towards* the affected side, and not *away* from it. Our patient has been lying all through her illness on the right side—the very attempt to lie on the left being productive of pain and increased difficulty of breathing. This sign is important whenever it exists in the marked degree in which it does in the present case. In bronchitis it does not occur, and in pneumonia, though a preference for one side is occasionally manifest, yet it is seldom well marked, and very frequently absent; in general such patients prefer lying on the back. In consumption, this symptom is often well marked, but the preference is sometimes for the affected, and sometimes for the unaffected side. This anomaly is capable of an easy solution—the escape of softened tubercle into the bronchi, by producing irritation and cough, interferes with the patient's rest, to procure which he selects whichever side

experience teaches him is least attended with this inconvenience. But inasmuch as the escape of tubercle, depending altogether upon the position of the cavity, and the mode in which the bronchial tube communicates with it, it must be obvious that no single attitude in bed can suit all the varieties which these are susceptible of assuming, and hence the contradictory positions they assume. But it is in pleuritis especially that the posture of the patient, or, as it is called, the decubitus, becomes a matter of paramount consideration. The distress that follows any departure from the position of his choice is so great, that no inducement can prevail on him to persist in using it for more than a few minutes. Nor is the posture the same in the early and the later stages of the disease. In the former, he lies upon the healthy side, because the pleura, like all serous membranes, though naturally insensible, becomes, when inflamed, impatient of the slightest pressure. The weight of the lung itself gravitating on the affected pleura, like that of the bed-clothes in peritonitis, is too much for the acute sensibility it has then acquired. But when effusion has taken place, the attitude is at once reversed, because the collected fluid separates the inflamed surfaces from each other, and, like the hydrostatic bed, diffuses the pressure upon all parts, without permitting it to accumulate upon any. Added to this, the fluid, by its mechanical properties, interferes with the functions of respiration in the affected lung, and throws the principal part of the duty upon the other. Now, were the patient to continue to lie upon the sound side after the effusion, as he did before, the healthy lung would be placed in a double disadvantage for breathing: it would have to support the weight of a large quantity of fluid, gravitating on the mediastinum, pressing against it; and further, the ribs,

from the patient's attitude, would be hindered of that free motion which is so necessary under the circumstances. This explanation is sufficient to account for the decided preference exhibited by these patients for one side over another when lying in bed—a preference infinitely greater than occurs in any other disease, and quite characteristic of the complaint. In saying this, I do not mean to deny that cases occasionally occur which controvert our positions in both respects, and that patients in the acute stage of pleurisy will lie on the affected side, while those suffering from effusion will lie indifferently on either, or in preference upon the sound side. But "exceptio probat regulam," these very cases, I doubt not, if properly sifted, would appear rather to confirm than to overturn our position, and that coëxisting lesions elsewhere, or a very peculiar state of the system, separate them from the ordinary class of cases.

But here, gentlemen, it is possible some of you may be ready to start an objection, and to say, if the case be really one of pleuritis with effusion, how comes it that respiration could be heard almost to the bottom of the lung? Gentlemen, I admit that there is force in the objection; but I appeal to those of you who attended at her admission, and examined the case, whether or not the respiration was not wholly suppressed in the lower portion of the right lung then, and whether its subsequent return did not coincide with the enlargement of the side and the displacement of the heart and liver? If this be so, as I have no doubt myself, and as I think you will readily admit, the explanation is easy. The effusion at first, though of trifling amount, pent up between the base of the parietes and the lungs, compressed the latter, and prevented the respiratory murmur being heard: subse-

quently, when the capacity of the chest was enlarged, it was allowed to gravitate towards the diaphragm, and to pass over to the mediastinum, so as to allow of the lungs coming into more immediate contact with the side, and hence the return of respiration.

Many years ago, when resident at the Whitworth Hospital, under the late Dr. John Crampton, I saw an instructive case of this kind. A man, labouring under empyema of the right side, which was enlarged, and had all the ordinary symptoms of the disease, gradually began to exhibit appearances which led me to hope that absorption was taking place. The side became smaller, the dulness at top of the chest began to clear, and respiration to return. But all this arose, not from absorption, but from the depression of the diaphragm, the arch of which was found after death to be inverted. I was not then as familiar with this subject as I have since become, and I mention it to prevent your falling into a similar error again.

Gentlemen, I have taken up so much of your time already in discussing this case that I must be very brief in speaking of the treatment. Pleuritis with effusion is a disease infinitely more difficult to cure than either bronchitis or pneumonia. Several circumstances combine to produce this effect: the rapidity with which inflammation spreads from one part of the membrane to another, the continued irritation that is kept up by the effused fluid acting as a foreign body; and the mechanical impediment to absorption that the layer of false membrane necessarily proves, have all probably some force in making this difference.

In managing these cases, there are two great principles to be kept in view, and these are—the arrest of the in-

flammation, and the removal of effusion. The first is to be accomplished by antiphlogistic measures generally, but especially by local bleeding and counter-irritation. Acting upon this impression, I had our patient twice cupped, once leeched, and a blister applied between the shoulders, with evident advantage. She was not bled from the arm, because her pulse was extremely weak, and her previous history did not seem to admit of it. For the purpose of relieving her bronchitis, she was ordered first a mucilaginous expectorating mixture with soda, and at a later period, the decoction of senega with ammonia.

The removal of the fluid can only be brought about by increased activity of the absorbents, and for accomplishing this, no means are so efficient as the rapid introduction of mercury into the system. With this view it was administered to Conolly, internally, in the form of pill, and externally by friction. The latter appears to me to have peculiar advantages in pleuritis, because the mineral, when rubbed directly over the part, must be carried through the affected vessels, and so exercise a local action sooner than it could otherwise. From the time that her system became decidedly under the influence of the remedy, an obvious amendment became perceptible.

LECTURE X.

VALVULAR DISEASE OF THE HEART—PULSATING ABDOMINAL TUMOUR.

GENTLEMEN,—The case to which I design calling your attention this morning is that of Alice Grogan, a young woman, aged 30, who was admitted on the 13th of January, 1848, and who is labouring under valvular disease of the heart. The following is the history of her case:—She was always a healthy girl, but obliged to work very hard to earn her livelihood as servant to a poor cottager, in which capacity she was accustomed to lift heavy weights of coal, water, &c., beyond her strength. Four years ago she became ill, but she is unable to mention any particular circumstance to which her illness ought properly be attributed. It consisted in paroxysms of dyspnœa, attended by palpitation at the heart, which were brought on by active exertion of any kind. She has frequent attacks of hœmoptoe, often to a considerable extent, which are always preceded by coughing, never by vomiting. Her health otherwise is good, but the recurrence of palpitation on every attempt at exertion altogether prevents her following her usual employment as a servant.

On examining her heart, I found there was a preternatural degree of dulness in the prœcordial region, principally on the left side; a loud, soft, double bruit over the aortic orifice, superficial, and propagated along the great vessels of the neck; while over the situation of the left ventricle there was another bruit, intensely blowing, deep-seated, and prolonged. This last was properly single,

although a second sound could be heard at the same time; it did not interfere with the former, but was evidently propagated *through* it. Both terminated together. These two sounds greatly exceeded the duration of the natural heart sounds, and the interval of rest was almost completely abolished. Pulsation was visible in all the large vessels of the upper extremities, while the pulse was pre-eminently jerking. On examining along the course of the abdominal aorta anteriorly, the double bruit could be heard for an inch below the ensiform cartilage, but no more. At a spot corresponding to the bifurcation of the iliacs, a tumour of the size of a small apple could be felt, which pulsated under the fingers, but was not tender to the touch. She said she had observed it for the last four years, during which time it had not increased in size. On applying the stethoscope to the spot, no bruit could be detected anteriorly, but a distinct single thumping sound was heard. Pursuing my examination along the back, I found there was no tenderness on pressing any part of the spine, though she stated she occasionally felt a dragging sensation "right fornenst the lump." The double bruit formerly mentioned could be heard very plainly between the spine and scapula, and even as low down as the eleventh or twelfth dorsal vertebra, but with diminished distinctness. Opposite the third lumbar vertebra, an arterial sound, exactly resembling the double sound of the heart, and destitute of bruit, could be heard plainly and much more loud than the bruit over the eleventh dorsal vertebra.

Such is the brief statement of the symptoms she presented at her admission, and which continue unaltered except that she says she suffers less from dyspnœa and palpitation, than she had done for some time previously. The case is interesting in a diagnostic, rather than a therapeutic point of

view, inasmuch as from the nature of her malady, recovery is out of the question, and the utmost we can promise now is some measure of temporary relief; yet, even in this light, the case is not unworthy of your notice, because, incurable as it is, treatment will tell most powerfully upon her condition, either aggravating or alleviating her suffering; either shortening or prolonging her existence.

Let us confine our attention, first, to the state of her heart. Here there were two diseases existing simultaneously,—permanent patency of the aortic valves, and regurgitation through the mitral. The former indicated by a murmur replacing the second sound, visible pulsation in the great arteries, and a jerking pulse. Of these three signs, I believe the first is the most important, but it is scarcely possible in the present state of our knowledge of the mechanism of the heart, to conceive of its occurrence without the co-development of the other two. Taken by themselves, we shall presently see that these last are liable to mislead.

It is now universally admitted that the second sound of the heart in health is produced by the recoil of the column of blood against the semilunar valves; whenever, then, these valves have been so injured by disease as to be no longer capable of fulfilling their office, the blood rushes back into the ventricle, and instead of the natural second sound we have a bruit developed. A single murmur then replacing the second sound is the natural index of this lesion, but as it seldom happens that disease affecting the valve merely impairs its power of *sustaining* the column of blood without at the same time more or less interfering with the onward current, we find that a *double* soufflet, as in the instance before us, is most generally associated with it.

Visible pulsation in the brachial arteries, if unaccompanied with murmur over the aortic orifice, replacing the second sound, is not at all an evidence of permanent patency of these valves. It occurs whenever the arterial tunics have become rigid from age, as you had lately an opportunity of witnessing in the old man from the country who was labouring under dysentery, and whose heart, you may remember, was perfectly healthy. It occurs also in persons suffering from chlorisis or hæmorrhagic anœmia, and in all of these, as well as in permanent patency of the valves, it depends upon the same physical condition—viz., an unfilled state of the vascular branches. In senile rigidity, the arteries do not accommodate themselves with the same pliant facility to the constant changes in the quantity of fluid circulating within them, which are caused by the alternate systole and diastole of the ventricles, that they do in health, and hence their capacity is constantly *greater* than the actual necessity. In hæmorrhagic anœmia and chlorosis, a similar result is produced by the want of tone in the arterial tunics arising from the unstimulating character of the blood. In all hollow viscera, the bladder, the stomach, the ventricles of the heart, &c., the contraction of the parietes bears a direct ratio to the quantity of fluid contained, and to the stimulating quality of that fluid; and although the arteries are formed of elastic, and not of muscular tissue, yet the same law of contraction prevails in them as in the organs we have been speaking of, only not to the same degree. Muscular fibre seems to be capable of contracting upon itself, till the opposite surfaces come in contact if nothing intervene, and hence it is not unusual to find, in making post-mortem examinations, these several viscera, but especially the heart, rolled up into a thick and solid ball. But in

the case of elastic tissue, such a thing never occurs; on the contrary, in the dead body, if an artery be cut across and emptied of blood, the vessel will remain gaping, though its contractile property continues unimpaired. I need scarcely stop to prove that in the case of permanent patency of the aortic valves, the arteries are also in an unfilled condition,

Now, whenever this physical condition occurs, no matter what its cause, the wave of blood which is thrown into the arteries by the ventricular contraction, and which produces in health no undulation, because the elastic tube which receives it is accurately filled, immediately causes an eddy against the sides of the vessel, and the pulsation, as a necessary consequence, becomes visible to the eye of the observer.

The principal features of the pulse, as observed in permanent patency of the aortic valves, are, a sensation of hardness to the touch as it first strikes the finger, and a sudden sinking afterwards, as if the wave receded more rapidly than usual. It is easy to be understood how the second of these characters is produced. The return of a quantity of blood back into the ventricles immediately after its expulsion, must naturally produce such a sensation, and therefore we are not surprised at the occurrence of the symptom when the valves are imperfect. But it is not so easy at first view to understand how the sensation of hardness is produced by the mere circumstance of the vessels being unfilled; a little reflection, however, will lead you to conclude that the development of friction between the current and the sides of the artery, which is the consequence of that condition, and does not exist in health, must have that effect.

This pulse, so peculiar in its character, is not confined to the disease in question; it occurs also in all those other cases where the pulsation is visible, and for the same reason; but it is seldom so well marked, because while the unfilled condition of the arteries admits of the blood distributing itself into the vacant space, it cannot in the nature of things do this so rapidly or to so great an extent as when it is connected with imperfection of the valves; and in general the intensity of this character in the pulse will be a pretty accurate measure of the amount of the regurgitation.

Regurgitation through the mitral orifice is likewise attended by a bruit; but unlike what we have been considering, it is generally single, and it replaces the first sound instead of the second. The portion of the chest, too, where it attains its maximum intensity, is different; being heard most distinctly over the left ventricle, and not over the aortic orifice. But in addition to those differences, there are others arising from the tone, duration, and attending circumstances of the sounds that help still further to distinguish them. Thus in disease of the mitral orifice, the murmur is deep in its tone, prolonged in its duration, and intensely blowing, while it can almost always be heard on the back between the left scapula and the spine. In disease of the aortic orifice, on the contrary, it is higher in its tone, shorter, and more sudden in its development; quite superficial, as if originating under the ear of the observer; audible for some extent along the upper and front part of the chest, and particularly along the course of the great vessels, but never in the back.

These circumstances, if carefully examined, cannot fail to enable you to pronounce in any case of doubt, what is the precise seat of any abnormal murmur you may be

called upon to examine. A murmur with the second sound almost invariably depends upon regurgitation through the aortic orifice. I know it is said by Hope, and his authority in all questions of the kind is entitled to great weight, that extreme contraction of the mitral orifice may give rise to a murmur, accompanied by the second sound, but in a case that I met with in the workhouse, and which I had the opportunity of studying for a considerable length of time, no murmur was developed, though the contraction was so great (as you see represented in this drawing) that it was impossible to pass the point of the finger through the aperture. The slowness of the current, as it passes from the auricle into the ventricle, is the reason why no murmur is developed, even though the contraction be ever so great. The auricles, properly speaking, constitute a part of the venous system, as the ventricles do of the arterial; and the blood moves in each with the velocity peculiar to their respective systems. In the auricles it is slow, uniform, and constant. In the ventricles it is occasional, sudden, and forcible. The vis a tergo, but especially the force of gravity (the auricles being superimposed upon the ventricles, with their foramina of communication downwards), seem to be the moving powers that propel the blood forwards, and not muscular contraction, as in the ventricles, and hence its diminished velocity, and its little power of overcoming resistance. But when the two lesions of aortic and mitral regurgitation coëxist, as in the case of Alice Grogan, the second bruit propagated by the current of blood descending into the ventricle, becames audible in that situation, where the bruit of mitral valve disease is peculiarly heard, and hence we have a double bruit over the ventricle, where we should expect to have found a single one merely. In the present instance, this double

bruit is evidently composed of two independent murmurs, one commencing in the course of the other, and being audible through it, while both seem to terminate about the same instant.

These lesions are much more frequently found united than separate, both because diseases of the heart originate in constitutional changes affecting the lining membrane, which is hence liable to become diseased in several places at once, and because aortic regurgitation, when it once takes place, necessarily leads to over-distention of the left ventricle, and this again to mitral regurgitation. In the case of Richard Heally, however, who was a patient in this hospital at the beginning of the session, we had an instance of mitral regurgitation, unaccompanied by any other morbid condition; I believe in him it was produced, not by disease, but by injury, the result of over-exertion, and that the rupture of one or two of the chordæ tendineæ was the cause of the regurgitation.

Let me now say a word or two upon the symptoms which result from these lesions indirectly, and which are, increased dulness on percussion, palpitation of the heart, dyspnœa, hœmoptoe, and general anœmia. Increased dulness over the prœcordial space is the necessary result of the enlargement of the organ, and is sure to follow in time regurgitation through the aortic orifice: the extent of this increased dulness in any case is a tolerably accurate measure of the amount of the regurgitation, and consequently of the danger.

Palpitation appears to be caused by the two ventricles not acting in strict harmony with each other. In health they both contract at the same instant, and propel an equal quantity of blood through their respective outlets. This is essential to the maintenance of an uniform circulation.

The act of contraction itself seems to depend partly upon the distention of the cavities by their appropriate stimulus, and partly upon an inherent property in the muscular walls leading them to contract at regular intervals, even though removed from the body, and completely empty. In the healthy individual, both of these conditions take place at the same moment. But when disease has destroyed the mechanism of the heart, and interfered with the proper course of the blood, the cavities are either filled too fast, or not filled fast enough, or one is filled while the other is empty, and the ineffectual efforts that nature institutes to bring about the required harmony is the cause of that peculiar and distressing sensation that accompanies palpitation, and constitutes its principal element.

Dyspnœa and hœmoptoe essentially depend upon the congestion of the lungs that results from the regurgitation of the blood at the mitral aperture. Here are two or three drawings of pulmonary apoplexy, taken from cases that fell under my notice in the Workhouse Hospital, that illustrate this combination very beautifully. Everything that hurries the circulation necessarily tends to produce this congestion, and consequently you can understand how it happens in our patient that she is so utterly incompetent to earn a livelihood by her own industry.

I shall not dwell upon the last symptom in this list—general anœmia—having on a former occasion called your attention to it in connexion with this very subject of aortic regurgitation, merely remarking that the pale complexion of our patient is a sufficient proof of its existence.

Before passing from this part of her case, it is important

I should explain the general principles of the treatment I have adopted, and which has been attended with a certain amount of benefit, though, as I remarked, it has been merely palliative. These are, perfect tranquillity both of mind and body, the recumbent posture, and supporting the tone of the system by nutritious but unstimulating diet, by tonics, and particularly by iron.

Formerly the usual practice in these cases was diametrically the opposite of that just mentioned, and consisted of starvation, occasional bleedings, and the internal administration of digitalis. This course of proceeding, originally recommended by Valsalva in the treatment of internal aneurism, was supposed to be suitable from the presumed analogy between the two affections. But this analogy appears to rest upon a weak foundation. In aneurism, the blood contained within the sac is in a great degree removed from the current of the circulation, and the cure of the disease seems to requre merely the coagulation of the contents. Now, this coagulation is expedited by an increased development of fibrine in the blood, a change that low diet and repeated bleedings are known to accomplish. But in valvular disease of the heart, the great object is to produce perfect quietude in its motions. And while alcoholic liquors, on the one hand, powerfully excite the ventricular contraction, and hurry the circulation, depletion and low living, on the other, no less certainly, though more slowly, produce the same effect; because under all circumstances whatever the circulation loses in force, is made up in frequency, and a weak pulse is almost always a quick one. Added to this, the mechanical disadvantage under which the heart is placed, when the aortic valves are diseased, of sustaining continuously the column of blood, requires a degree of strength in the walls of the ventricles

that a too restricted system of diet is not capable of furnishing.

Let me now call your attention to the other feature in her case, which consists of a pulsating tumour in the abdomen, corresponding to the spot at which the aorta bifurcates into the common iliacs. The question for consideration is, whether or not this tumour is an aneurism. In favour of that opinion may be urged, its expansive pulsation, its evident connexion with the artery, its influence in modifying the arterial sounds, and the coëxistent disease of the heart. On the other side must be enumerated, its not increasing in volume, its want of the peculiar pain that characterises aneurisms, and the difference between the sounds actually heard, and those which have been commonly observed to attend abdominal aneurism.

I am not going at present to discuss the diagnosis of internal aneurisms generally—that would be to enter upon a wide field that the time at our disposal is not sufficient for, but I will merely observe, that if our predecessors have fallen into the error of supposing that it was impossible to arrive at an accurate diagnosis of these affections, modern theorists seem likely to fall into the opposite one of supposing that they ought to be diagnosed during life in all cases. I have lately seen three instances in which patients died suddenly from this cause where the danger was never suspected during life. Not but that, if the slightest reason had occurred to direct attention to the possibility of the lesion existing, it is probable that in every one of the instances, an examination with that object in view would have led to its detection. One of these was a lunatic; the second was a patient of a morose disposition, who never gave a satisfactory account of himself; and the third, like the first, was not under my own care.

The circumstances that lead us to suspect the existence of a deep-seated aneurism are chiefly two—the development of a local pain, and the evidences of pressure upon contiguous organs. Whether pain be produced or not in any case, seems to depend in a great measure upon the precise portion of the artery which gives origin to the tumour. Thus, in the ascending aorta, the fact of its growth from the anterior wall will be more productive of suffering than if it sprang from the posterior: while in the descending aorta it is the reverse: the reason of this is obvious on reflection. Dr. Law, whose labours have thrown great light upon this subject, states it as the result of his experience that abdominal aneurism is always attended with a double kind of pain, one fixed, constant, and of a dull, boring character; and the other sharp, occasional, and shooting; and he tells us that he has often been led to suspect the existence of the disease, and to diagnose it successfully from this very circumstance, when other practitioners had considered the affection merely as rheumatism. That this double kind of pain frequently attends aneurism of the descending aorta, cannot be questioned, but that it is invariably present, is certainly erroneous. Here is a drawing of a patient who died in the workhouse, and who was frequently examined by Dr. Doherty and others, as well as myself. You see how deeply the disease had produced caries of the dorsal vertebræ, and yet he neither complained of pain in the situation, nor did he exhibit the slightest wincing under pretty firm pressure over the affected vertebræ. This double pain is supposed to be caused, the dull portion by caries of the vertebræ, and the acute by inflammatory action set up about the part, and involving the spinal nerves as they emerge from the column. Now, the want of this peculiar and double pain in the case of

Alice Grogan does not appear to me to be any argument against the disease being aneurism, both because it may be sometimes absent, as I have shown you, and because, if it be aneurism at all, it is aneurism springing from the front of the aorta, and, therefore, less likely to produce this symptom.

With reference to the help that the other symptoms—pressure upon adjacent organs—is likely to give us in our attempts to diagnose internal aneurism, it must be plain that the abdomen is less favourably circumstanced than the thorax. The greater flexibility of the parietes, and the power of mutual accommodation possessed by the intestines, naturally operate in a way that permits tumours to attain a great size without any considerable inconvenience being felt at the time from mere pressure. Hence, in all cases of latent aneurism, which destroy life by bursting suddenly, we find them invariably situated within the abdomen, or low down in the posterior mediastinum. But this disadvantage in examining the abdomen is, perhaps, partly compensated by the facility it presents of manipulating the suspected tumour. In the case before us, this was readily accomplished, but the information it afforded was not satisfactory, because the same sensation might easily have been produced by the growth of a mere tumour round the artery: the expansile movement communicated to which, by the wave of blood, would exactly represent what was actually felt.

It was for a long time thought, on the authority of Laennec, that internal aneurisms were invariably accompanied by a single bellows murmur, and that this circumstance alone would be sufficient to enable us to arrive at a true diagnosis. But the fallacy of this opinion has been amply proved. So far from this being the case, it is now

known that the greatest diversity prevails in this respect, some aneurisms being attended by a single, some by a double bruit, some by a double sound exactly resembling the normal sounds of the heart, and some by no sound at all. Dr. Barker of London relates two cases of abdominal aneurism, in the *Medico-Chirurgical Transactions*, in which, though repeated examinations were made, no bruit whatever could be detected. Dr. Law mentions in one of his papers, that bruit de soufflet is constantly absent in thoracic aneurism, and as constantly present in abdominal. This has been thought to depend upon the integrity of the arterial tunics, the former being generally *true* aneurisms, while the latter are *false*. But it appears to me to depend much more upon the way in which gravity* acts upon these different portions of the arterial tree, bruit de soufflet depending upon the unfilled condition of the artery at the part. Now, in aneurisms of the ascending aorta, and of its arch, the force of gravity acting upon the columns of blood in the carotids, must necessarily tend to keep tense that portion of the tube which intervenes between their origin and the heart, while in those of the descending aorta, this pressure is distributed equally upon all the branches lower down, and this tense condition cannot occur: hence the difference.

If the present case be one of abdominal aneurism, it is an exception to the rule just mentioned, but from the cases recorded by Dr. Barker, too much stress cannot evidently be laid upon the absence of this symptom. Examined from the back, you have, at a spot corresponding to the seat of the supposed aneurism, another sound, exactly resembling

* At the time this was delivered, I was not aware of Dr. Bellingham's theory, lately published in the PRESS. His views coincide to some extent with this explanation, but not altogether.

the double sound of the heart, which has been found to accompany many cases of internal aneurism. This is evidently a sound not propagated from the heart, nor connected with the artery, but developed locally at the spot. I am not at present prepared to explain the peculiar mechanism upon which such a sound as this is produced by an aneurism, unless, perhaps, it may be that a local inflammation or irritation is developed round the tumour, and that the increased force of the circulation in consequence exaggerates the natural murmur of the artery. But there is another sound audible in front different from this, and which exactly resembles a thump short, thick, and single, but not blowing.

M. Gendrin was, I believe, the first person who at any length called attention to this sound in connexion with aneurism, in a paper in the *Revue Médicale*, in 1845 ; but I had previously remarked its occurrence in a case which I published in the *Dublin Medical Journal*, in 1842, but without investigating its cause. According to M. Gendrin, it depends upon the impulse of the arterial current striking the aneurism against the sternum, and is occasionally double when the reflex current causes a second impulse. So far as I am aware, it has never before the present occasion been noticed except in aneurisms of the thorax, for the very obvious reason, that if its mechanism be correctly explained, it requires some resisting body to strike against. In the present instance no such circumstance can explain its production, and it becomes a subject of interesting study for further investigation. Of its existence there cannot possibly be a doubt.

On the whole, I am inclined to regard this tumour as an aneurism, from the fact that the peculiar murmurs recognised in other aneurisms, are here so plain, so local in

their situation, and so obviously exhibit a maximum of intensity in the spot corresponding to the seat of the tumour. Further from the fact, that although the tumour is not tender, nor accompanied with the ordinary pain of the disease, yet it is attended at times with a dragging sensation not much different. But from its stationary character, I am inclined to believe, that if it be an aneurism, it is to a great extent occupied with coagulated fibrine.

THE END.

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